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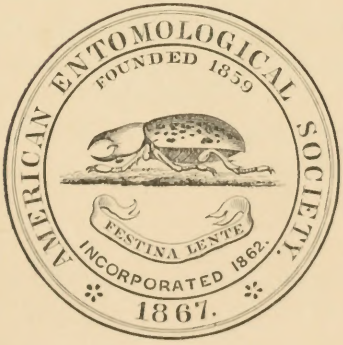

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Notes on GRAPTAS C-AUREUM and INTERROGATIONIS.—Fab.

By WM. H. EDWARDS.

Until the publication of Mr. Lintner's paper in Trans. Amer. Ent. Soc., 1869, these two species had been treated by late authors as identical, some describing one and some the other, or sexes of either, under the names *C-aureum* and *Interrogationis* indifferently. Our collectors had accepted without much question, the statement of Boisduval and Leconte, which is in effect, that although there would seem to be more than one species, yet as the caterpillars are the same, the butterflies must be the same also.

The first mention of a Papilio *C-aureum* is in Linnæus, Syst. Nat. 1760, I, p. 477, as follows; "C-aureum. P. N. alis angulatis fulvis nigro maculatis; posticis subtus C-aureo notatis. Habitat in Asia."

This species is now recognized as equivalent to *Angelica*, Cramer, pl. 388, an Asiatic species found in India and Japan, materially and unmistakably differing from any American Grapta. Though, be it noted that the above indefinite description applies to either of our large species, or indeed, excepting the silver mark, to any Grapta then or now known.

In 1775, Fabricius, Syst. Ent. page 506, describes *C-aureum* nearly in same words; viz, "P. alis dentato-caudatis, fulvis, nigro-maculatis; posticis subtus C-aureo notatis. Habitat in Asia." and refers to Linnæus.

In 1781, Fabricius, Sp. Ins. II, p. 94, again describes *C-aureum* in same words, with same reference to Linnæus and habitat, but refers also to Cramer, II, pl. 19, fig. E, F. Cramers figures purport to represent an American species, which may properly be considered as the one had in view by Fabricius, although there was error in his reference to Linnæus and in his habitat, caused naturally by the vague description of Linnæus.

In 1797, Abbot (Insects Georgia), figured without description as *C-aureum* the species before given by Cramer.

Mr. Lintner determines that both Cramer's and Abbot's figures represent the male of that one of these two species which has a red upper surface and much falcated forewings, in contradistinction to that with black hind wings, and slightly or not at all falcated forewings, which he calls *Umbrosa*. To avoid confusion, I will, for the present, speak of these as *C-aureum* (Fab.) and *Umbrosa*.

At first glance Abbot's figures seem to represent *Umbrosa*. But after careful comparisons with many individuals of both species, I think Mr. Lintner's conclusions correct. There is a great variation. Some *Interrogationis* have very dark brown hind wings, and may well have stood for Abbot's figures, which are coarsely executed. The outlines of both wings and falcation of fore wings, as Mr. Lintner points out, are those of *C-aureum*, not *Umbrosa*. On the under side the coloring is faithful to neither but nearest *C-aureum*. The same remarks will apply to Cramer, whose figures, also, are very coarse. In fact, nothing would be lost by rejecting all these figures.

In 1798, Fabricius (Supp't. p. 424), for the first time mentions and describes *P. Interrogationis*, viz; "alis caudatis fulvis nigro maculatis, *subtus glaucis*: *striga punctorum nigrorum*, posticis C-aureo notatis.

Habitat in America boreali.

Nimis affinis *P. C-aureo at paullo major* et alæ *subtus glaucæ striga punctorum nigrorum.*"

Wings tailed, fulvous, spotted with black, *beneath glaucous* (i. e. a blue or green inclining to grey or white) with a *transverse band* (*striga*) *of black points.** * * * Extremely like *P. C-aureum* but a *little larger* and the *wings beneath glaucous with a transverse band of black points.*

Now Fabricius could not have said that his *Interrogationis* was "extremely like" *Angelica* Cramer, (that is, *C-aureum*, Linnæus,) for as stated, the two differ materially and unmistakably.

But the words *glaucæ striga punctorum nigrorum*, twice repeated, mark the importance attached to those characters. They were in fact the characters relied on as at once determining the new species from his *C-aureum*, thereby also determining this *C-aureum* itself, and with the words *paullo major* apply completely to the female of *Umbrosa*. This alone of the males and females of the two species can be called glaucous, that word well expressing the color by which the wings are suffused. To either sex of *C-aureum* the word is wholly inapplicable, the male being brown in varied shades and the female brown suffused

with ochraceous. And *Umbrosa*, of the two species, is the one distinguished *in both sexes* by a band of *distinct black points crossing both wings*. There are traces of such a band in the male *C-aureum*, (as there are in all Graptas) but the points are less conspicuous always and usually in part obsolete. In the female the traces are still fainter and the points almost always obsolete.

In the description of *Umbrosa*, by Mr. Lintner, these black spots are spoken of as pupils of rounded spots of lighter brown. I regard the "rounded spots" as no spots, but as the faintest halo about the black spots. Mr. Lintner speaks of these black pupils as distinct on the fore-wings in the male and *female*, expressly saying also that "in the female the *rounded spots are obsolete*, but the *pupils* are *distinct*," (the *striga punctorum nigrorum*); and that in the female of the other species (*C-aureum*) "*these pupillated spots do not appear.*"

I conclude therefore, that *Umbrosa*, female, Lintner, is neither more nor less than the true *Interrogationis*, Fabricius, and that the former name can rank only as a synonym. For aught that appears the male was unknown to Fabricius.

In this conclusion I am sustained by Godart, so far as to the fact of the female of the one or the other of these species being the *Interrogationis*, Fab. In Encyc. Method., IX, p. 302, 1819, he says: "Fabricius has taken the male for *C-aureum* of Linnæus and has made of the *female* a separate species under the name of *Interrogationis*. And he gives as synonyms *C-aureum* Fab. male, *C-aureum* Cramer, and *Interrogationis* Fab. female. Then as the name *C-aureum* was preoccupied by Linnæus, and regarding all these forms as varieties of one species, he applies to them the name *Interrogationis*, Fab., and says, describing it, "Le dessons de male est d'un gris bois ondé et varié de brun;" (i. e., *C-aureum*, Fab. but by no means the true male of *Interrogationis* Fab.) le dessous de la femelle est brun et légèrement glacé de vert blanchatre, surtout aux secondes ailes:" (♀ *Interrogationis* Fab.) Thus giving to the male of one species the female of the other.

On page 819, he further says of his *Interrogationis* ♂ "Le dessous est d'un brun noiratre ou feuille-morte plus ou moins nuancè de gris violet." This describes a variety of *C-Aureum* ♂, which is sometimes flushed with purplish.

Boisduval and Leconte give a badly executed figure, composed, apparently of the upper surface of *C-aureum* and the under surface of *Interrogationis* Fab. ♂. The shape is rather that of the latter. It

is copied from one of Abbot's drawings, a poor copy of a poor original; but the under side is not to be mistaken.

The accompanying description mixes the species and sexes surprisingly. Closely following Godart, they say, "Le dessous des ailes est tantot d'un gris de bois ondé et varié de brun," (♂ *C-aureum*) "tantot d'une couleur ferrugineuse ou feuille-morte uniforme, avec l'extrémité un peu plus claire," (♀ *C-aureum*). "Jouvent brun, légèrement glacé de vert-blanchatre, surtout aux ailes inférieures:" (♀ *Interrogationis*, Fab.) and add that in all the varieties there is a silver spot, sometimes in *form of a C*, and *sometimes* of an *uninterrupted* C or interrogation point. Here these authors seem to me to have also included *Grapta Comma*, Harris, then undescribed, as a third species, that species in many respects resembling the other two, and being distinguished by an uninterrupted C, a character unknown to me in the others.

Boisduval and Leconte further add, "This Vanessa varies much, and if we did not obtain from the same caterpillar (la meme chenille) the varieties of which we have spoken, we could easily make three species;" here, again, I suppose, alluding to *Comma*.

Dr. Harris describes *Interrogationis*, 2nd Ed. Ins. Mass. p. 298, as having the hind wings in *the male most often black above*, except at base, and *sometimes* of this colour *in the other sex also*; under side of the wings in some rust red, (*C-aureum*) "in others marbled with light and dark brown, glossed with reddish white," (♂ *Interrogationis* Fab.)

Dr. Harris therefore considered the male *Interrogationis* Fab. as the type, and the male *C-aureum* as a variety, and the female *C-aureum* as the type, and the black female a variety.

However, in what manner authors subsequent to Fabricius regarded these species has no direct bearing upon the main question, which is—did Fabricius properly distinguish them or either of them? Certainly he did. He was unacquainted with the male of his *Interrogationis*, but his description of the female was precise, and the language used proves that he had not in mind this male when he referred to *C-aureum*. His *C-aureum* was without a band of black spots, and was what he considered to be Cramer's *C-aureum*. That the latter was intended to represent the male of the other species is the opinion of Lintner and, I think, with reason.

If Mr. Lintner is right on this point, then, inasmuch as the name *Interrogationis* was applied by Fabricius to the female of the black winged species (*Umbrosa*), that is now the true specific name.

If he is wrong, and the figures of Cramer and Abbott may be supposed to represent the male of *Umbrosa*, then to this male Fabricius applied the name *C-aureum;* which being pre-occupied, his subsequent name, *Interrogationis*, covers both sexes and the species.

My conclusion is this: in one case, the red winged species is still unnamed, in the other its name, (*C-aureum*), is pre-occupied. I therefore propose to call it *Fabricii*, in honor of the great naturalist.

The synonyms of the two species will then be as follows, viz.:

G. Interrogationis, Fab. Suppt. p. 424 ♀.
Godart Enc. IX. p. 302 ♀.
Harris Ins. Mass. Text ♂ ♀.
C-aureum,
Bois. and Lec, plate ♂ text ♀.
Umbrosa, Lintner, Trans. Am. Ent. Soc. 1869 ♂ ♀.

G. Fabricii, Edwards.
C-aureum Cramer II. pl. 19 ♂.
Fab. Sp. Ins. p. 94, No. 410 ♂. Ent. Syst. III. p. 78, No. 243.
Abbot, Ins. Ga. ♂ pl. 11.
Bois and Lec, text.
Interrogationis, Godart, Enc. IX. p. 302 ♂.
Ibid p. 819, ♂ Var.
Harris, Ins. Mass. 2nd Ed. plate.
Lintner, Ab. Cit. Trans. Am. Ent. Soc. 1869.

G. Fabricii, described as follows:

Form alike in both sexes; primaries strongly falcated, much incised; secondaries have a prominent tail, anal angle prolonged.

Male; expands 2.5 to 2.7 inches; Upper side bright red fulvous, the terminal third of primaries and whole of secondaries obscured by ferruginous; a common sub-marginal series of small fulvous patches. Primaries have upon the disk five rounded black spots, disposed in a right angle, of which the two smallest are in the cell and three transverse to these in the interspaces; in the upper part of first median interspace usually another spot of fainter color; a large, sub quadrate spot depending obliquely from the costa, covering the arc; near apex two black or blue points. Secondaries have fulvous patches on costa and at origin of first and second median nervules; a large, bi-lobed, black spot on costal margin, a small spot near base of second subcostal nervule and another at base of second median; hind margin of both wings and abdominal margin at the fold largely edged with lilac; fringes short, fuscous.

Under side wholly clouded or mottled with shades of brown and ferruginous, sometimes partially suffused with purplish; the basal space limited by a ferruginous line, the course of which, on primaries, is angular, on secondaries, undulate, turning in at the cell and extending far down the abdominal margin, broadly bordered within by ferruginous and cinereous; enclosed in the basal space a few patches of darker color, especially on costal margins; on primaries three small spots at base of cell; outside the ferruginous line a narrow, unclouded space, beyond which, on primaries, the limb is mottled with ferruginous and ochraceous; a sub-apical blue-grey patch, inclining to white, on costa; inner angle tinged with lilac; along the incision a row of metallic blue streaks and points, continued on the whole margin of secondaries, often nearly obsolete; a common submarginal row of five black points, more or less obsolete, or only distinguishable by a glass, and partially edged by blue scales; costal edge ferruginous, beaded by rounded yellow spots, between which and the costal nervure the ground is yellow, irrorated with ferruginous. Secondaries have a ferruginous, nebulous, subapical patch, and a stripe curving from the upper median nervule towards anal angle; silver spot an interrupted C; the hind margins of both wings much covered by fine, abbreviated, ferruginous streaks.

Body above fulvous covered on thorax with greenish hairs; beneath grey ferruginous; legs buff; palpi buff, on upper side fulvous; antennæ fuscous above, annulated below with buff; club fulvous tipped with buff.

Female expands 2.6 to 3 inches. Upper side in color and markings similar to male. Under side brown, suffused with ochraceous, deeply along hind margins; the disk sometimes slightly tinged with purplish; the whole surface covered by fine ferruginous streaks; the basal space limited as in the male, enclosing spots similar but faintly colored; the submarginal row of black points obsolete or represented by two or three points at outer angles only, and in all cases minute; margin at apex and inner angle, and, on secondaries, the tail and abdominal margin slightly washed with lilaceous.

This species differs from *Interrogationis* in many respects and closely resembles it in others. It differs in shape of wings, they being more falcated, more incised; the hind wings have a longer tail and more prominent anal angle; the color is more red, and the hind wings are red instead of black; the fringes are fuscous instead of white; the margins are largely bordered by a bright lilac, while those of *Interrogationis* are but slightly edged with a dull grey. Beneath, the male of

Fabricii is mottled with brown and ferruginous, whereas, the male of the other species is mottled or marbled in various colors, ferruginous, cinereous, grey, yellow, brown and purple. There are also differences in the markings of costa of primaries on under side, and in the common submarginal spots, these last being conspicuous in one species and obsolete in the other. The color of under surface of *Fabricii* ♀ is brown suffused with ochraceous, that of *Interrogationis* ♀ brown suffused with blue grey.

On the other hand, the two species are alike in size in both sexes, and in the markings of fore wings, and in hind wings also, so far as those are not obscured by black. On the under side the pattern is very nearly the same, though the colors differ. The legs, palpi, and antennæ are the same.

And here I will notice the remarkable resemblance between these species and *G. Comma*, which combines the characters of the other two. The largest specimens of *Comma* are equal in size to the smallest of the others; the form is sometimes that of one, sometimes of the other, varying much in falcation and length of tail; the color of upper side is between the two; the spots precisely the same; on the under side the same words would describe the males of *Comma* and of *Interrogationis*, varying only the shades of color. The lines, basal space, spots, dots, patches, stripes and metallic marginal spots are all the same except in color. Moreover, individuals of *Comma* are not unusual in which the silver spot is an interrupted C as in the other species. I have no doubt, as before said, this species was formerly considered as a variety of *Interrogationis*.

(We have also a fourth species nearly allied to *Comma*, hitherto undescribed, to which I have given the name of *Dryas*, intending to publish a full description in the current volume of these "Transactions." The upper surface of the male is much like that of *Interrogationis* male, the hind wings being black. The under side very much resembles *Comma*, but shades of yellow predominate in the coloring. The silver C is very slender. The under side of the female is readily distinguished from all the species by its yellow hue, which is pretty uniform, though densely covered with ferruginous streaks. This species I have several times taken or bred from the larva, at Coalburgh, and it will probably be found wide spread, though, perhaps, no where common.)

All three are abundant in West Virginia, and for several seasons I have had opportunities of watching them in every stage of develop-

ment. All feed upon the same plants, elm, hop, nettle, ambrosia, and, at the same time, the eggs and the young larvæ of each species in every stage of growth, may usually be found. But I have several times noticed that the larvæ of uniform size, or the eggs deposited on one or two successive days on a particular plant, produced one species only. For example, on the 7th of June, 1869, I found on the hop a number of larvæ from one day to one week old and several eggs. The latter were about $\frac{1}{50}$ of an inch in diameter, green, melon shaped, ribbed vertically and depressed at either end; gummed at one end to the leaf. Under a glass the ribs were prominent—vitreous. As the eggs matured the color became a bottle green. They were fastened indifferently to any part of the leaf or stem, the only preference being for young leaves. Frequently two or more were found one standing on the end of the other, perpendicular to the leaf. Several times three were so found, and, in one instance, four. After the larvæ emerged the ribs of the eggs resembled threads, the intervening colorless membrane being broken.

The larvæ, at first, were black, $\frac{1}{10}$ inch long, covered with black hairs and short spines. After first moult length $\frac{3}{10}$, color still black, but one transverse set of spines, near each extremity, were reddish yellow. With the next moult the color became black, striped longitudinally with red, and with yellow streaks and dots at base of spines. These last were in seven rows, many branching, red, or yellow red tipped with black, except those on first two and last segments which were wholly black; this phase continued to maturity, although there were variations in the color of the spines and in the relative preponderance of black or red. Length, when mature, two inches.

Between the 26th and 30th of June 23 of these larvæ had produced imagos, every one of which was of *Interrogationis*—13 ♂ 10 ♀.

From the 7th to 21st of August, I found many more eggs and many larvæ, and on the 21st was fortunate in seeing a female *Interrogationis* deposit an egg, from which, in due time, I obtained the imago.

The larvæ of *Fabricii* were, likewise, black at first moult; black, with two bars of red and yellow spines at second, but thenceforth distinctly varied, becoming russet, or reddish specked with fine yellow papillæ, so much specked often as to make the general color rather yellow brown, than red brown; the spines sometimes whitish, sometimes whitish at base and red at tips, with, in all cases, those at the extremities red.

From these speckled larvæ came 8 ♂ 11 ♀ *Fabricii*. From black

striped larvæ came 3 ♂ 3 ♀ *Interrogationis*. But from striped larvæ, in no way distinguishable from the latter, came 1 ♂ 2 ♀ *Fabricii*, and from speckled larvæ came 1 ♂ 1 ♀ *Interrogationis*.

So that it appears while the striped larvæ usually indicate *Fabricii* and the speckled *Interrogationis*, there are cases exactly the reverse. In previous seasons I had found the same result. I am not sure that there was any difference in the shape of the eggs of the two species, though sometimes I thought I discovered that those of *Interrogationis* were equally large at either end, those of *Fabricii* were largest at base. But I had not a glass of sufficient power to settle the point.

The chrysalids of the two species I was unable to distinguish. They are well described by Dr. Harris as "ashen brown, with the head deeply notched and surmounted by two conical ears, a long and thin nose-like prominence on the thorax, and eight silvery spots on the back." Except in shades of color, some being more ashen and some more brown, I could distinguish no difference. This is more noticeable because the characteristics are conspicuous. It was on account of these resemblances that Boisduval and Leconte considered the two species as one. Yet, without any doubt, they perpetuate their kind, and are to be judged specifically distinct.

The larvæ of *Comma* bear no close resemblance to those of the two larger species, and the chrysalids are quite distinct; which is remarkable, considering the resemblance of the butterflies. The three species together with *Dryas* may be regarded as having sprung from a common type, very near to or identical with *Interrogationis*, from which *Comma* and *Dryas* first diverged, to be followed by *Fabricii*, the latter not yet wholly separated from the parent stem, as the similarity of the chrysalids and the occasional interchangable forms of the larvæ show.

I intend figuring all these species with the larvæ in a subsequent number of the Butterflies of North America, and shall be obliged for any assistance lepidopterists can render me in making their history more exact and complete.

Descriptions of New Species of DIURNAL LEPIDOPTERA found within the United States.

BY WM. H. EDWARDS.

1. Parnassius Behrii.
2. Colias Edwardsii.
3. " Emilia.
4. " Ariadne.
5. Pieris Virginiensis.
6. Argynnis Nevadensis.
7. Grapta Silenus.
8. " Zephyrus.
9. " Marsyas.
10. Grapta Dryas,
11. Thecla Behrii.
12. " Tetra.
13. " Dryope.
14. Lycæna Kodiak.
15. Chrysophanus Cupreus.
16. " Hermes.
17. " Virginiensis.
18. Hesperia Hayhurstii.

Parnassius Behrii, n. sp.

Male. Expands 2.5 inches. Upper side pure white; marginal border of primaries transparent, enclosing a submarginal row of large white lunules; no median transparent line as in *Clodius;* costa, base of primaries and disk much sprinkled with black scales; a large, subovate black spot in cell, a broad, tortuous bar on arc; beyond the cell two small white patches in irregular black rings; in median interspace a black point.

Secondaries have the base densely covered with black scales, which extend thinly along margin beyond cell, projecting a branch upon the arc; at the ends of nervules on margin small black patches; a submarginal row of conspicuous black lunules, separated; in the upper discal interspaces a large, pale ochraceous spot within a black ring.

Under side marked as above, except that on costal edge of secondaries is a second ochraceous spot, of same size, in black ring; base of secondaries marked by patches of black disposed like the red spots of *Clodius;* on abdominal margin a black stripe divided into two spots by the lower median nervure.

Thorax beneath, and palpi white; antennæ black annulated with white; club black.

From 1 ♂ taken in the Sierra Nevada. Collection of Dr. Behr.

This differs widely from any other American species, in the extent of the pure white color and consequent smallness of the transparent space, the conspicuous black markings and the absence of red spots.

COLIAS EDWARDSII, Behr. n. sp.

Male. Expands 2.1 inches. Upper side bright lemon yellow, color of *Alexandra;* base of wings slightly powdered with black scales; primaries have a narrow, black, marginal band, the inner edge of which is nearly regular, extending a little way on costa, and on inner margin projecting a short attenuated spur; this band cut nearly to the fringe by the yellow nervules; discal spot black, subovate; costal edge and apical part of fringe roseate, at and above inner angle yellow. Secondaries have a narrow marginal band terminating at the lower branch of median, cut by the nervules, nearly regular within, there being only slight projections on the nervules; discal spot wanting; fringes yellow.

Under side of primaries pale yellow, fading towards hind margin and still more on inner margin; discal spot black with a few roseate scales in centre; costal margin slightly covered with black scales. Secondaries much covered with same scales, most densely at base and in middle of disk; ground color very pale yellow; at base of median a small roseate spot; discal spot of medium size, margaritaceous, with rosy scales about its edge; fringes as above; costal edges of both wings roseate.

Body above, lemon yellow, beneath inclining to whitish; palpi whitish; legs pale roseate; antennæ roseate; club brown above, ochrey yellow beneath and at tip.

Female. Expands 2 inches. Upper side same color as male; hind margin of primaries has a broad, incomplete border, represented at inner angle by a few scales only; discal spot as in male, but with a few scales only in centre. Secondaries have a large, rounded, orange spot on disk, without ring; beneath as in male, except that secondaries are more densely powdered with black, giving a grey shade to the wing; discal spot larger, distinct, edged with roseate; fringes of primaries, above and below, pale roseate, except at the inner angle of primaries; costal edge of secondaries, and both hind and abdominal margins fringed with roseate.

Variety A. *Female.* Expands 2.3 inches. Color much paler; primaries have a narrow border of separated scales edging the whole margin, expanded on costa into a large patch; discal spot of primaries pure black, of secondaries orange; beneath as in the type.

1 ♂, 2 ♀, from the collection of Dr. Behr, taken near Virginia City, at high elevations, and named by Dr. Behr in honor of Henry Edwards, Esq., of San Francisco.

This species is near *Emilia.*

COLIAS EMILIA, n. sp.

Male. Expands 1.9 inch. Upper side bright lemon yellow; bases of wings very slightly powdered with black; fringes pale pink, yellow at inner angle of primaries and at outer angle of secondaries.

Primaries have a narrow, black, marginal band, cut to the edge by yellow nervures, erose within, of even width, not expanded on costa, projecting a slight excavated spur on inner margin; discal spot small, yellow, subovate, edged by black.

Secondaries have a very narrow marginal band, terminating acutely at the lower median nervure, even within, but partially cut by the nervures; no discal spot.

Under side of primaries same yellow at base, fading towards hind margin; costal margin slightly powdered with black scales; discal spot indicated by a few black scales only; costal edge deep pink; secondaries inclining to buff, densely covered with fine black scales; discal spot small, rounded, margaritaceous in a narrow pink border; at base a small pink spot; costal edge pink; fringes as above, but deeper colored.

Body covered with greenish yellow hairs; collar pink; beneath, pale yellow; legs pink; palpi yellow, pink at tip; antennæ deep pink, deep brown fulvous at tip.

Female, same size.

Upper side a shade paler; the marginal border on primaries indicated by clusters of black scales, wanting on secondaries; discal spot on primaries large, subovate, black; on secondaries, pale orange.

Under side like male; discal spot of primaries black. Much as above.

From 1 ♂, 1 ♀, taken in Oregon by Mr. Wm. M. Gabb. Collection of Dr. Behr.

This species resembles *Alexandra*, from which, however, it differs in breadth and form of marginal borders, in color of fringe, in discal spot of secondaries beneath, in the presence of a pink spot at base, and in the absence of a greenish shade to both surfaces. It also differs from any *Colias* with which I am acquainted, in the shape of hind wings, which are remarkably produced at outer angles.

COLIAS ARIADNE, n. sp.

Male. Expands 1.8 inch. Upper side bright yellow, much colored with black at base of both wings and along abdominal margin to middle of cell; on primaries a deep orange patch extends from median to inner

margin, fading into yellow beyond middle of disk; marginal border narrow, nearly straight within, curving slightly at apex and expanded on costa to double the greatest width elsewhere; crossed at apex by yellow nervules; discal spot large, subovate, orange, covered with black scales, showing an orange border and points of same color between the scales.

Secondaries have a border of same width as primaries, extending but little beyond second branch of median; discal spot unusually large, rounded, deep orange, without a ring; fringes of both wings deep roseate, at inner angle of primaries and outer angle of secondaries giving place to yellow; costal edge of primaries roseate, and shoulders conspicuously so.

Under side of primaries paler, deepest next base; costal margin to apex widely sprinkled with black scales; discal spot enclosing a large, yellow white spot; a submarginal row of small brown spots or points, curving around the apex, with two points on costa. Secondaries much obscured; discal spot duplex, a large silver spot and a point, each surrounded by a broad dull pink ring; on the middle of the larger ring are silvery scales; a submarginal row of pinkish spots; a patch of same color on costa and another at base of median.

Body black covered with greyish hairs; on thorax with roseate; beneath, thorax yellow with some roseate hairs; legs pale rose; palpi yellow tipped with rose; antennæ roseate, club brown.

Female. Expands 2 inches. Similar to male, a little more greenish; discal spot of primaries orange with an irregular black ring within or upon the orange; marginal border less dense than in male, confined to edge of wing, preceded on costa by a few patches of black scales; border of secondaries restricted to outer angle; discal spot, as in male; beneath as in male.

1 ♂, 1 ♀, from the collection of Dr. H. Behr, and taken at Mokeluma Hills, California.

A well marked and distinct species.

PIERIS VIRGINIENSIS, n. sp.

Size of *Oleracea;* wings longer, narrower, more delicate, of a less pure white.

Male. Expands 1.5 to 1.7 inch. Upper side white, more or less obscured by grey or smoky brown; bases of wings, costa and apex of primaries greyish; a grey patch on costa of secondaries; the obscure portion mostly confined to basal half and inner margin of primaries, and

to the subcostal and median nervures of secondaries. Under side white, the nervures bordered with smoky brown, most densely on sub-median of both wings and the branches of same nervure on secondaries; shoulder of secondaries pale orange.

Body above blue grey, below white; palpi white tipped with grey; antennæ fuscous above, white below, finely annulated with white.

Female. Expands 1.7 to 1.9 inches. Similar, the surface more obscured, in some individuals almost wholly so.

Not uncommon in the Kanawha district in the month of May, and there replacing *Oleracea*. I have received from Mr. Saunders occasional specimens taken by him at London, Canada.

ARGYNNIS NEVADENSIS, n. sp.

Primaries long, narrow, convex on hind margin.

Male. Expands 2.2 inches. Upper side pale yellow fulvous, slightly obscured at base; hind margins bordered by two parallel lines, enclosing throughout narrow fulvous spaces between the nervules; the submarginal spots narrow, serrated or lunular, enclosing large concolored fulvous spots, all connected with each other and with the marginal lines; other markings delicate, well defined, similar to those of *Halcyone;* the median band of secondaries being confluent and the discal spot large, open, much like the letter C inverted; fringes luteous, on primaries blackish at ends of nervules.

Under side of primaries uniform pale buff except next base and within the two cellular spots, which have a faint reddish tint; hind margin edged by two faint olivaceous lines; the two lower submarginal spots black, enclosing buff spaces, the others, six in number, olivaceous enclosing silver spots; submarginal patch olivaceous with two silver spots and traces of a third on the margin. Secondaries yellow, the disk mottled with olivaceous; the band between the two outer rows of spots narrow, distinct; the silver spots unusually large, iridescent, 24 in number, viz: seven submarginal, triangular, edged above by a few black scales and a narrow olivaceous border; the second row of seven, the first three, fifth and sixth nearly equal, subovate, the fourth small, triangular, the seventh subquadrate, all narrowly edged above with black and projecting olivaceous shadows upon the band; the third row of five, the first semi-oval, the fourth and fifth lunate, the second obsolete, third large, pyriform, cut by the arc, all edged above with black; in the cell two small round spots, a long oval at origin of median, these three edged by black; two patches at base of upper nervures; shoulder

and abdominal margin slightly silvered. Body above fulvous, beneath buff; legs buff; palpi buff, ferruginous above and at tip; antennæ brown above, fulvous and grey beneath; club black tipped with ferruginous.

Female. Expands 2.8 inches. Color a shade paler; the marginal lines diffuse, on primaries forming a broad black band showing traces of fulvous spots only next inner angle; the spots within apical lunules whitish; secondaries present a row of spots, a shade paler than the former, corresponding to the second silvered row of under side.

Under side of primaries yellow buff, deep fulvous at base and on inner margin, covering three fourths of all, passing into reddish buff towards inner angle; submarginal spots as in male, but less distinct, and enclosing, throughout, silver spaces; subapical silver spots as in male.

Secondaries buff, a shade less yellow than primaries, mottled with darker buff; spots, as in male, very large, the second row completely but delicately edged with black.

From 1 ♂, 1 ♀, in the collection of Henry Edwards, Esq., San Francisco. Taken in the valleys of the Sierra, near Virginia City, in 1869.

This distinct species in the markings of upper side and in the form and size of silver spots is nearest *Halcyone*, but is much smaller, the margin of primaries convex, of a pale color above, and quite different beneath.

Grapta Silenus, n. sp.

Male. Expands 2.2 inches. Upper side dull yellow fulvous, clouded by brown, and spotted with black as in the allied species; the spots on inner margin of primaries and the costal patch large, diffuse; a large patch on disk of secondaries; a second, smaller, at origin of median nervules; submarginal lunules on both wings conspicuous, yellowish; fringes fuscous.

Under side grey brown covered with black streaks, densely and almost wholly on basal third, nearly as much on the margins, leaving but a narrow lighter space on the disks; silver mark short, thick, attenuated at extremities, bent at right angles.

From 1 ♂ taken in Oregon; received from Henry Edwards, Esq.

This species belongs to the same group with *Progne*, *Gracilis* and *Zephyrus;* is larger than either, duller colored, heavily spotted with black, beneath nearly black.

GRAPTA ZEPHYRUS, n. sp.

Size and form of *Gracilis*.

Male. Expands two inches. Upper side deep red, fulvous at base, fading into pale orange on disk; on primaries a subapical fulvous patch, another at inner angle; on secondaries the outer limb partially covered by fulvous in form of an interrupted transverse band, within which are yellow or soiled white submarginal spots; a similar row of spots on primaries; the black markings as in *Gracilis* and *Progne*, the spots small, well defined.

Under side hoary, covered throughout by fine brown streaks, most densely next base; the incision of primaries edged by a brown band, on the anterior edge of which are a few scattered olivaceous scales and a black line; silver mark narrow, bent at an obtuse angle, attenuated below.

Body above fulvous covered with greenish hairs; beneath grey fulvous; palpi white, fulvous on upper side, with a black line beneath; antennæ brown above annulated with grey beneath; club brown tipped with ferruginous.

From 2 ♂ taken at Virginia City by Henry Edwards, Esq., in 1869. Also received from Colorado, and from Fort Simpson, McKenzies River.

This species is nearest *Gracilis;* is paler colored above, and nearly uni-colored beneath, whereas in *Gracilis* the basal third is dark, and the hoary space is confined to the disk; in that species also the secondaries have a submarginal black band with green lunules which is wanting in *Zephyrus*.

GRAPTA MARSYAS, n. sp.

Form of *Comma*, much smaller; primaries scarcely falcated, much excised; on secondaries a long and very broad tail, posterior to which is a deep incision and a prominent dentation; anal angle produced.

Male. Expands 1.6 inch. Upper side fulvous, ferruginous at base; marked and spotted with black as in *Comma;* a common, submarginal row of yellow lunules; the marginal border of secondaries ferruginous, much sprinkled with yellow scales.

Under side in shades of brown and olivaceous, the ground color quite dark, the pattern of markings very much as in *Comma;* the common discal band not distinct; the extra basal space densely streaked with ferruginous; on costa of primaries a large whitish patch enclosing

one of grey green; apex clear olivaceous limited below by a ferruginous stripe following the nervule to the margin; on secondaries a ferruginous, sub-apical patch and a curved stripe as in *Comma*, but not distinct, owing to the dark ground color; a common submarginal row of black points as in the allied species; incision of primaries and hind margin of secondaries bordered by olive green lunules; silver mark an arc of a circle, thickened at upper end, barbed at lower end.

Body above fulvous, beneath grey vinous; legs buff; palpi buff below, fulvous above and at tip; antennæ fuscous above, ochraceous below; club black, fulvous at tip.

Female. Same size. Primaries less incised, tail short, narrow; dentations less prominent; marked on upper side as the male; under side brown and grey brown, densely streaked with ferruginous; the basal space of nearly uniform color; the discal band only indicated by the outer black line; extra basal space to margin a shade paler, of uniform color; submarginal black points distinct; the white patch wanting except on the edge of costa; incision of primaries darker, wanting the green spots; silver mark larger, less arched, slight and without barb.

From 1 ♂, 1 ♀, from California. From the collection of T. Reakirt, Esq.

GRAPTA DRYAS, n. sp.

Allied to *Comma*, especially in markings of under surface of male; primaries less falcated, less incised.

Male. Expands about 2.3 inches. Upper side yellow fulvous, marked with black and ferruginous as in *Comma* and *Interrogationis;* secondaries almost wholly black, as in the latter species, the black shade gradually passing into fulvous near base; three fulvous submarginal points or spots at outer angle; a black patch on costa and spot in cell, in some cases only distinguished by a deeper shade than the ground color; fringes white in the emarginations, fuscous at tips of nervules.

Under side marbled in shades of grey, brown, ferruginous, olivaceous and honey yellow; faintly suffused with lilaceous near base and on costa of primaries, and throughout densely covered with fine, abbreviated streaks of ferruginous; the basal space presenting shades of greyish brown, limited without by an irregular deep brown or ferruginous common discal band; in cell three distinct dark brown spots; the extra basal space lilaceous on primaries, and the same in secondaries but mixed with yellow; beyond, to margins, primaries are partly honey

yellow, partly clear yellow, the latter color at apex and inner angle; secondaries have a large nebulous ferruginous or olivaceous patch at outer angle, and a similar curved stripe from median nervure to anal angle, both wings crossed by a conspicuous submarginal row of black points or small spots; on primaries a subapical ferruginous patch enclosing a lilaceous spot on costa; the incision edged by a brown line which is preceded by metallic grey lunular spots edged with black; similar lunules on secondaries; costal edge of primaries lilaceous and buff, crossed to the nervure by ferruginous streaks and spots. Silver spot an open C, large, narrow, thickened at extremities.

Body above fulvous, covered with greenish hairs; below pale vinous brown; legs buff; palpi buff below, ferruginous above and at tip; antennæ fuscous above, buff below; club black, tipped with ferruginous.

Female. Expands 2.7 to 2.9 inches. Upper side similar to male; under side honey yellow densely covered with ferruginous streaks; the pattern of markings as in male but faint and lost on the ground color; some individuals light, the yellow predominating, in others the ferruginous streaks give color to the whole surface; submarginal black spots less conspicuous, and, sometimes, on disk of primaries wanting; marginal lunules as in male, but less distinct; silver spot sometimes as in male, but usually slighter and not thickened at extremities.

From 4 ♂, 5 ♀, bred or taken at Coalburgh, W. Va., in 1868 and 69. I have noticed the occasional occurrence, for some years, of this species, but for a long time regarded it as a variety of either *Comma* or *Interrogationis*. I am not able now to describe the larvæ from which I obtained the bred specimens. The species is between *Comma* and *Interrogationis*—nearest the former. The under side of the female differs materially from the female of either species. It cannot be a common species, but may be wide spread and found in the same districts as the allied Graptas.

Thecla Beirii, n. sp.

Male. Expands 1 inch. Upper side glossy yellow fulvous; primaries have a very broad fuscous costal and apical border and one of medium width on hind margin, the remainder of the wing being fulvous; stigma small, black, oval.

Secondaries have a narrow marginal border, and are edged by a grey line; fringes long, fuscous.

Under side fawn color, somewhat greyish on secondaries, the margins edged by a pale line; primaries have an obsolete discal spot,

a median row of blackish points, all edged without by white, the second and third from costa much behind the line; on margin a row of rather indistinct blackish points.

Secondaries have three spots next base and a discal spot, all obscure; a median tortuous row of large blackish spots, edged without by white, and a marginal row partly lunulate, the first from angle nearly obsolete, surmounting a grey space, the second largest edged posteriorly by a few fulvous scales and above a round black spot; the fourth and fifth points.

Female. Expands 1.15 inch. Similar to male, less deeply colored; on under side spots generally larger; the three next anal angle marked by fulvous scales.

Taken at Lake Mono, California. Collection of Dr. Behr.

Thecla Tetra, Behr, (in lit.) n. sp.

Female. Expands 1.2 inch. Upper side uniform light brown; secondaries have a single tail; anal angle produced; fringes grey, next anal angle terminating in fuscous.

Under side paler brown; both wings have an indistinct, common, tortuous median row of whitish crescents; secondaries have a submarginal row of small black lunules edged anteriorly by a few whitish scales; the one preceding the tail resting upon a faint fulvous patch, the second from angle upon a faint blue patch.

Thecla Dryope, n. sp.

Female. - Expands 1.2 inches. Upper side pale brown, broadly edged with fuscous on hind margin and apex of primaries, narrowly on secondaries; fulvous on disk of primaries posterior to cell and to inner margin; a fulvous submarginal border on secondaries, deepest near anal angle, gradually fading towards outer angle; costal edge of primaries fulvous; a white line edges the margin before anal angle; fringes sordid white.

Under side yellowish grey; both wings have obsolete discal streaks; a common median row of small rounded black spots, edged with white, those of secondaries except the first and seventh from costa, mere points; a common submarginal series of spots, obsolete on primaries, or represented by a few black scales only, a little more distinct on secondaries; the spot at anal angle, and the third, fourth and fifth showing a few orange scales posterior to the black, the third most distinctly; next the angle traces of a large blue patch, but scarcely distinguishable without a glass.

Body above, brown, beneath, white; palpi, white; antennæ black, annulated with white; club, black, ferruginous at tip.

From 1 ♀ taken in Plain County, Colorado. Collection of Henry Edwards, Esq. Approaching *Lycæna* in the color and markings of under side.

LYCÆNA KODIAK, n. sp.

Male. Expands 1.25 inch. Upper side dull violet blue; margins narrowly edged with fuscous; fringes sordid white.

Under side fawn color, bluish at base; slightly clouded with grey on secondaries; both wings have fuscous discal bars, edged with whitish; a common median row of rounded fuscous spots, all edged with whitish, that of primaries curved beyond the cell, of secondaries parallel to the margin; a common submarginal row of faint spots, the second from anal angle surmounted by a round spot, perhaps belonging to median row, but much posterior to the line of same; near base, a black point on cell and a second on costa.

Body above blue, thorax beneath, blue grey; palpi white at base, furnished with long black hairs, black at tip; antennæ black, annulated with white; club black above, ferruginous below and at tip.

Female. Expands 1.3 inches. Upper side light brown, deep blue at base, covering half the wing on primaries, fading gradually towards the hind margin, and on secondaries covering the cell and upper abdominal margin; primaries have a curved black line at extremity of cell; faint traces of fulvous spots next anal angle.

Under side as in male.

From Kodiak, 1 ♂, 1 ♀. Collection of Dr. Behr.

CHRYSOPHANUS CUPREUS, n. sp.

Male. Expands 1.1 inch. Upper side bright copper red, color of *rubidus;* hind margins edged by black, the secondaries narrowly; both wings crossed by a tortuous, extra-discal, row of small brown spots and points; a spot on arc of primaries and a faint spot in cell; on arc of secondaries a black point.

Under side of primaries ochraceous inclining to red; spots as above, larger, edged with white; a spot near base in cell; marginal border fawn color, on the anterior edge of which is a row of brown points.

Secondaries paler, mottled with white, obscured at base; a marginal series of orange crescents, the one next anal angle long and narrow; traces of brown spots on marginal edge; extra discal spots as above, in

addition to which are eight others, three on costa, two on arc, two in cell, and one in abdominal margin.

Female. 1.2 inch. Paler red, similarly marked, spots large; under side like male.

From 1 ♂, 1 ♀, from Oregon. Collection of Dr. Behr.

Chrysophanus Hermes, n. sp.

Male. Expands $\frac{9}{10}$ inch. Upper side pale fulvous; costal edge and hind margin of primaries brown; base obscured; on disk several brown spots of which the outer ones form an irregular row across the wing; a spot on arc and a second in cell.

Secondaries have a long pointed tail; on the margin next anal angle an indistinct row of blackish spots; on the arc a recurved black stripe; surface of wing much obscured.

Under side of primaries pale buff, the spots repeated but large and more distinct; margin grayish: secondaries have the basal two-thirds grayish, the margin buff clouded gray; the disk crossed by a row of black spots, those at the extremities crescent; on the arc a black streak; three small spots above in a transverse line and three others near base; at anal angle a black spot and near it others almost obsolete.

Female. Expands $1\frac{1}{10}$ inch. Similar to male, the markings more distinct.

From California. 1 ♂, 1 ♀, from the Collection of Henry Edwards, Esq.

Chrysophanus Virginiensis, n. sp.

Male. Expands 1.2 inch. Upper side glossy brown with a faint purple reflection; marginal borders fuscous; secondaries have a long tail tipped with white; from anal angle to second median nervule a bright fulvous stripe covering the tail and enclosing at the angle and beyond the tail fuscous spots.

Under side of both wings grey brown, somewhat clouded by whitish, which, along the margins, takes the form of two parallel bands; disk of primaries pale ochraceous; primaries have a small black spot at base of cell, a larger midway, and a still larger on arc; a fourth below the middle spot, a doubly bent median row; all these spots slightly edged with white.

Secondaries have three spots at base, and four large spots between these and middle of wing; a long streak on the arc and a discal row of which the two next costa are small, subovate, the next duplex, and

the remaining spots connected, forming a conspicuous patch with a hooked branch turning towards abdominal margin; the fulvous band replaced by a narrower, deep orange or vermillion, projecting a branch to the tail and surmounting two black spots on the margin.

Body above brown, beneath white or grey; palpi white, fulvous at base below, black above and at tip; antennæ brown annulated with white; club brown, tip ferruginous.

Female. Same size. Upper side fulvous, with broad brown marginal border to primaries, and a narrow edge of same color to secondaries, preceded beyond the marginal spots by a faint brown lunulated line; costal and abdominal margins also largely brown; the spots of under surface repeated above; beneath, as in male, but lighter colored, the whitish bands and the spots more distinct.

Taken at Virginia City, Nevada. Collection of Dr. H. Behr.

This species resembles *Arota*, Bois. The black spots of under side are much heavier than in *Arota*, and the orange band a marked feature.

Hesperia Hayhurstii, n. sp.

Male. Expands 1.1 inch. Upper side blackish brown, obscurely clouded by a lighter shade; two white dots beyond cell of primaries; fringes unusually long, erose.

Under side dark brown with a faint purple gloss, slightly sprinkled, especially on abdominal half of secondaries, with dull green scales; the white dots repeated.

Body beneath grey white; palpi white below, blackish above; antennæ brown annulated with white; club velvet black, brown at top.

From two ♂ ♂ taken in Missouri by L. K. Hayhurst, Esq., in 1869. Allied to *Nisoniades*, but belonging to a distinct genus, as I am informed by Mr. Scudder.

SYNOPSIS NOCTUIDARUM HUCUSQUE IN CALIFORNIA REPERTARUM.

BY HERMAN BEHR, M. D.

Hypena Californica, Behr.

H. rostrali similis sed margine exteriori alarum anticarum magis repanda apiceque acuto. Linea mediana exterior stricta, nullo modo undulata vel repanda, prope marginem posticam dente extus verso aucta. Signaturæ reliquæ maxime variabiles interdum fere obsoletæ.

Larva læte viridis Plusiiformis in Urtica gracili pascens.

Rather common near San Francisco.

AGASSIZIA, Behr.

Genus maxime singulare, inter *Boletobiam* et *Xylioden* Gn. intermedium, differt a *Boletobia* conformatione palporum, qui cum palpis *Xyliodis* a cel Guénée descriptis omnino congruunt. *A. xyliode* longe distat et forma alarum et venarum distributione qua cum *Boletobia* fere convenit, sed tamen non congruit. Quum vero specimina perpauca quæ possideo squamis denudare non ausus sim venarum fabricam exacte describere nolui, dum copia speciminum denudare et destruere permittat.

2. **A. Urbicola**, Behr.

Alæ omnes sericeæ fuscæ violaceo micantes, linea duplice brunnea repandiuscula divisæ. Alarum anticarum pars costalis brunneo punctata, initia linearum ordinariarum indicans. Subtus alæ omnes dilutæ fere concolores.

Three specimens in my collection from different parts of California. One specimen captured in a warehouse in San Francisco.

The larva of this interesting little insect is not known. As the larvæ of *Boletobia carbonaria*, the only one in this most anomalous group that we are acquainted with, is found to feed on fungi and wood in a certain state of decomposition, I venture the opinion that a similar mode of living might be that of our *Agassizia*.

Two other specimens of an equally paradoxical interest were collected by Baron Terloot in the Sierra Madre, between Mazatlan and Durango, and are congeners, if it is allowable to draw conclusions from specimens that are not perfect in all essential parts.

3. **Capnodes Californica**, Behr.

Alæ omnes pallide stramineæ. Alarum anticarum lineæ medianæ simplices et umbra mediana subfuscæ. Umbra marginalis per lineam submarginalem undulatam pallidam transversa. Macula fusca, semilunaris in loco maculæ reniformis. Alæ posticæ et cunctæ subtus fere ut alæ anticæ supra signatæ.

Size of *Ephyra Omnicronaria*, to which Geometride it also bears a striking analogy in its general appearance. It is, at present, the only representative of this tropical genus in our State. One specimen from Downieville.

4. **Erebus Odora**, Linn.

This well known and far spread species has been found also in California, in whose southern portion, perhaps, it will prove as common as in the adjacent parts of Mexico.

5. **Catocala Zoe,** Behr.

Alæ anticæ fuscæ, spatium intermedium albidum, maculæ et reniformis et infrarenalis, nigro marginatæ olivaceoque ocellatæ. Umbra mediana maculam reniformem extus amplectitur. Lineæ medianæ albidæ, interior undulata, exterior e punctis conformata. Spatii basilaris margo anterior albido punctata, totumque maculis obsoletis nigris variegatum. Linea submarginalis albida angulata. Limbus pallescens. Alarum posticarum spatium basilare aurantiacum, reliquum nigrum, fascia aurantiaca irregulariter undulata et erosa divisum. Fimbria lutea. Subtus alæ anticæ luteæ, prope basin umbra obscura divisæ. Limbus niger, fascia lutea divisus. Posticæ parte anteriori albida, reliqua fulva et ut supra nigro signatæ.

One specimen, raised from a caterpillar very much like that of *C. Promissa*, of Europe. It was found by Mr. Müeke at Searsville, beneath a clump of trees composed of Quercus lobata, Alnus viridis, and a species of Willow. The caterpillar, when in my possession, did not touch any food, but united some oak leaves to a case, in which it transformed in a pruinous chrysalis, of the general appearance of its congeners. Size that of *C. Nupta.*

6. **Catocala Stretchii,** Behr.

Alæ anticæ griseæ atomatæ, signaturis ordinariis dilutis. Mediana linea interior undulata pallida. Macula reniformis adumbrata bipupillata. Mediana linea exterior angulata, hic et illic lineis nigris intus marginata, ubique parum distincta. Linea submarginalis diluta. Alarum posticarum spatium basilare lateritium, reliquum nigrum, fascia lateritia lata sublævi divisum. Fimbria pallida prope apicem anteriorem in maculam extensa. Subtus alæ anticæ nigræ basis pallida. Macula fasciiformis alba a margine anteriori oritur et fascia alba per alam exteriorem ingreditur. Posticarum pars anterior alba, posterior rubra. Limbus et fascia mediana nigri.

One specimen, collected by Mr. Stretch, at Virginia City.

Size of *C. Nupta.* Nearest related to *C. Elocata.*

7. **Catocala Irene,** Behr.

Alæ anticæ fuscæ, margine exteriori et posteriori cinerascentes. Pars basalis obscura. Mediana interior repanda per lineam nigram longitudinalem divisa. Pars anterior spatii mediani per lineam nigram transversam rectam divisa in spatium, interius pallidum et exterius, quod maculam reniformem obscuratam continet. Mediana exterior angulata et valde repanda, intus nigro marginata. submarginalis grisea angulata subrecta. Umbra apicalis maculiformis. Alarum posticarum spatium basale lateritium reliquum nigrum, fascia lateritia versus angulum analem undulata divisum. Fimbria alba prope apicem anteriorem in maculam extensa. Subtus alæ anticæ nigræ. Basis pallida. Macula fasciiformis oritur e margine anteriori. Fascia versus angulum posticum attenuata transgreditur alam exteriorem. Limbus et apex cinerascentes. Posticæ rubræ versus marginem anteriorem albescentes. Limbus latus et fascia mediana nigri. Fimbria versus apicem in maculam extensa alba.

Ft. Tejon, one specimen. Size of *Promissa.* Nearest to *Unijuga.*

These three Catocala form, evidently, only a small fraction of the number of species that will be eventually discovered in California.

Baron Terloot de Popélaire, known by his scientific travels in Peru, has observed in this country, during his stay at St. José, a *Catocala* with blue hindwings similar to the European *C. Fraxini.*

8. **Bolina Jucunda,** (?) Hübner.

As I am not certain that the species in my possession is the same as that described by Hübner, I give here the description.

Alarum anticarum spatium basilare triquetrum, fusco-violaceum. Sequitur fascia ossea divergens. Dum spatium fusco-violaceum, macula extracellulari extus dentinosa ossea interruptum vestigiis quc lineæ medianæ exterioris divisum, extenditur ad lineam submarginalem intus saturate marginatam. Margo dilutior violascens. Linea apicalis brevis nigra. Alæ posticæ a radice ad mediam alam osseæ, dum fuscæ. Fimbria ossea spatio fusco interrupta. Color osseus prope venam quartam in marginem fuscam paululum suffunditur. Subtus alæ anticæ a radice ad mediam alam osseæ, dum fuscæ, macula fasciiformi in loco maculæ extracellularis posita ossea divisæ. Alæ posticæ fereut supra.

Three specimens from Downieville.

9. **Bolina Cinis,** (?) Gn.

I am not quite certain as to the identity of this species with that of Guénée, but as I possess only a single specimen, the differences with Guénée's description might be accidental.

10. **Bolina Hadeniformis,** Behr.

Alæ anticæ cinereæ, extra umbram medianam paululum obscuriores, macula extracellulari grandi ovata paululum dilutiori signatæ. Alæ posticæ osseæ, limbo lato fusco macnlis duabus osseis interrupto. Subtus alæ anticæ margaritaccæ. Umbra mediana et limbus latus fusci versus marginem posticum uniti. Alæ posticæ margaritaccæ, limbo fusco ut supra signatæ.

The sober and uniform coloring of the forewings distinguishes this species from all its congeners. One specimen from Downieville.

I possess five other species of *Bolina* from Lower California, and two from the Sierra Madre. It is very probable that some of them extend to the southern districts of our state. Most of them belong to the type of *B. jucunda*, others imitate in their colouring and markings *Catephia Alchymista*, *Plusia Gamma* and other types.

11. **Syneda Ochracea,** Behr.

Alæ anticæ ochraceæ fere unicolores. Lincarum medianarum et lineæ submarginalis principia tantum exstant in margine anteriori. Macula renalis bene distincta fusca semilunaris et cum margine anteriori perumbram cohærens. Alæ posticæ luteæ. Margo fusco maculata. Macula discalis et fascia angulata fuscæ. Subtus alæ fere ut supra signatæ sed colore omnino reverso, alis anticis lutcis, posticis ochraceis.

I know of only two specimens, one of them in my collection the other in Mr. Stretch's, the one found near San Francisco, the other in Marin County.

12. **Syneda Nubicola,** Behr.

Alæ anticæ griseæ marmoratæ. Macula extracellularis, pallidior intus per umbram medianam bene definita, extus suffusa. Principia linearum solitarum

in costa paululum exstant. Linea apicalis nigrescens. Alæ posticæ ad medium osseæ versus basin griseæ. Limbus niger per fasciam osseam divisus. Fimbria pallida. Subtus alæ omnes osseæ, posticæ fere ut supra signatæ. Anticæ limbo griseo marginatæ. Fascia submarginalis nigra cum umbra mediana grisea confluens maculam extracellularem magnam amplectitur.

One specimen, caught by Mr. Hoffman of the Geological Survey at the alpine prairies round the headwaters of Tuolumne River.

This species imitates, to a certain degree, the habits of a *Brephos*, but its well defined palpi and the conformation of the two legs remaining to the rather imperfect specimen in my collection, show clearly that it is far distant from *Brephos*, and demonstrates its close affinity to the other species of *Syneda* scarcely modified by an alpine habitat.

13. **Syneda Maculosa,** Behr.

Alæ anticæ fusco cinereæ. Linea mediana interior divergens. Sequitur spatium album fasciiforme. Macula extracellularis alba ampla, ubique bene definita. Linea apicalis nigra marginem pallidiorem oblique pervadit. Alæ posticæ ut in præcedente. Subtus fere ut species præcedens.

Three specimens from the headwaters of Tuolumne River. The species most appropriately connects the two previously described, somewhat aberrant species, with the typical Synedas.

14. **Syneda Mexicana,** Behr.

Alæ anticæ fusco violaceæ. Linea mediana interior nigra recta parallela. Sequitur spatium fasciiforme osseum. Linea mediana externa pallida, rectius. cula, parum conspicua. Macula extracellularis ossea reniformis, intus diffusa, extus bene definita. Linea submarginalis pallida, versus angulum posticum magis evidens. Linea apicalis nigra. Alæ posticæ usque ad medium osseæ. Limbus niger per lunulam fulvam interrumpitur. Subtus alæ omnes osseæ, posticæ ut supra signatæ, anticæ fascia et limbo nigris instructæ.

Two specimens from Cosalá, near Mazatlan, collected by Mr. Bruns, the superintendent of the mine. I thought it expedient to insert the diagnosis of this fine insect, notwithstanding its being exotic. To have the uninterrupted series of closely allied species will facilitate their recognition and prevent mistakes.

15. **Syneda Tejonica,** Behr.

Alæ anticæ fuscæ. Linea mediana interior nigrescens. Sequitur spatium fasciiforme pallide violaceum. Macula extracellularis dentinosa et limbus ultra lineam submarginalem repandam pallide violacei. Alæ posticæ aurantiacæ, fascia irregulariter erosa, maculisque duabus marginalibus nigris. Subtus alæ omnes candidæ, plus vel minus colore aurantiaco tinctæ. Posticæ ut supra signatæ, anticæ linea discali infasciam obliquam nigram producta et cum fascia nigra marginali versus angulum posticum, confluente signatæ. Limbus plus vel minus maculis nigris instructus.

Three specimens from Ft. Tejon. A fourth one in possession of Mr. Stretch, caught at Virginia City. The species varies in the coloration of the hindwings, which are, in two specimens, nearly white with only a slight orange tinge about disc and margin.

16. **Syneda Stretchii**, Behr.

Præcedenti similis. Alæ anticæ fusco violaceæ. Linea mediana interior arcuata nigrescens. Sequitur spatium fasciiforme osseum. Reliquum spatium medianum violaceum lineis saturatioribus parallelis tribus perfluum. Macula extracellularis ampla reniformis ossea, in spatium saturate violaceo brunneum interdum interruptum et in maculas solutum immersa. Linea submarginalis parum distincta. Limbus fusco violaceus. Alæ posticæ aurantiacæ, signaturis nigris ut in præcedente instructæ. Subtus alæ anticæ fulvæ per umbram nigram obliquam divisæ, ultra umbram nonnullis maculis et lineis nigris irregularibus signatæ. Posticæ fere ut supra.

Three specimens from Virginia City. Collected by Mr. Stretch.

17. **Syneda Socia**, Behr.

Præcedenti similis, sed differt in alis anticis macula extracellulari dentinosa, in alis posticis, per lineam discoidalem utrinque in fasciam productam, quæ supra attingitad marginem anticam, et infra cum fascia ordinaria unitur. Subtus alæ omnes fulvæ. Anticæ per umbram nigram dimidiatæ, ad marginem exteriorem adumbratæ, macula triquetra prope apicem e costa orta et macula limbali prope angulum posticum nigris signatæ. Posticæ fere ut supra signatæ, sed linea costali minus producta et dilutiori.

One specimen from Ft. Tejon. Notwithstanding that only one specimen can be inspected, the difference of the upper side is striking enough and is confirmed by the entirely different under side, so that I consider myself justified in describing it as a new species.

18. **Syneda Adumbrata**, Behr.

Alæ anticæ fusco violaceæ. Spatium basilare saturatius, medianum dilutius. Umbra triquetra occupat spatium inter lineam medianam externam et submarginalem et amplectitur maculam dilutiorem amplam bidentatam. Alæ posticæ a basi ad mediam alam luteæ, macula discali crassa nigra signatæ. Dum ad marginem nigræ fascia lutea undulata interruptæ. Subtus alæ omnes luteæ. Limbus et fascia submarginalis nigræ, macula discalis nigra in anticis in fasciam obliquam producta.

Three specimens from Downieville.

This and the following species approach very nearly to *S. graphica* Gn., with which the one or the other might be identical. The figure of *S. graphica* as given in the Atlas of Guénées Noctuélites, is decidedly different from both, as the hindwings of this *Syneda* are represented as being nearly all yellow and only marked by a few black spots. But that figure, strange enough, does not agree with Guénée's description, which comes much nearer to *S. Adumbrata*, or the following *Divergens*. As it is difficult to settle the question here in San Francisco, I consider it expedient to describe and name both species and not to complicate matters by enumerating a species of whose habitat, in California, I still entertain doubts.

19. **Syneda Divergens**, Behr.

Duo specimina, quæ illustr. Whitney Geol. Surv. Conductor benevole mecum communicavit, a specie præcedente differre videntur linea mediana interna di-

vergente, neque ut in præcedente cum altera paralella, nec non macula discoidali alarum posticarum in fasciam producta et cum spatio nigro marginali confluente. Specimina vero quæ possideo, quum valde detrita sint, nec diagnosin nec figuram exactam conficere permittunt.

From the foot hills of the Sierra Nevada.

20. **Syneda Edwardsii**, Behr.

Alæ anticæ fusco-violaceæ. Lineæ medianæ pallidæ, bene impressæ, læves, medio convergentes spatium medianum saturatius medio constrictum amplectuntur. Macula extracellularis parum apparet atque tantum cognoscitur umbra saturate brunnea, quæ extus maculam circumdat et spatium inter maculam et medianam externam occupat. Lineæ submarginalis principia costalia tantum exstant, duobusque punctis saturatis indicantur, reliqua vix apparet. Alæ posticæ luteæ, puncto discali crasso fasciiformi, cum limbo nigro confluente, qui per fasciam luteam undulatam dividitur. Cunctæ signaturæ nigræ valde crassæ. Subtus alæ anticæ fulvæ, maculis et fasciis nigris varie et irregulariter signatæ. Alæ posticæ violaceæ fere ut supra signatæ.

Not rare at Alameda and other localities in Contraeosta. Resembles in flight and habits an *Euclidia*.

I have not yet succeeded in finding the larva of any of the species of this interesting genus. As to its systematical position, I am under the impression that it is intermediate between *Bolina* and *Euclidia*. It may be that *Parthenos Nubilis* of the eastern States is of the same affinity, and forms a connecting link between *Syneda* and the Homopterides. Its affinity to the Catocalides appears to me doubtful, but it is not time to discuss these questions, as long as the larva state of neither of them is known.

21. **Homoptera Salicis**, Behr.

Alis omnibus brunneis, denticulatis, lineis indistinctis undulatis obscuratis. Spatium limbale cinereum versus apicem anticum colore brunneo superatum, a linea submarginalo saturatiori intus susceptum. Alæ anticæ insuper linea apicali suffusa signatæ, carum que limbus cinereus per umbram in media ala interruptus. Subtus alæ omnes fuscæ, lineis parallelis undulatæ. Puncta discoidalia discerni vix possunt.

One specimen, raised from a caterpillar found on willows. It was without fringes but resembling, by the black ventral spots and in general appearance, a half-grown caterpillar of *Catocala Nupta*.

22. **Homoptera Rosæ**, Behr.

Præcedenti persimilis, sed differt spatio limbali saturatiori, neque ut in præcedente cinereo.

This species varies, by the parallel undulate lines being more or less defined, and by a basal space of more saturated tinge, bordered by an arcuate line vicariating for the interior median line.

All my specimens originate from a brood of caterpillars found in a garden at San Francisco on a rosebush. They resembled the caterpillars of *H. salicis*, but were of a darker and more brownish hue.

Synopsis of the PARNIDÆ of the United States.

BY GEO. H. HORN, M. D.

It is now nearly eighteen years since the publication of the synopsis of this family by Dr. Leconte (*Proc. Acad.*, Feb. 1852). In the meantime a number of species have been added to the list, while many others from California and adjacent regions, collected by myself, remain without names. The object of the present paper is to bring before the American student a complete list of our species with sufficiently detailed descriptions to enable them to be readily determined. Several errors in family characters, copied from one author to another, have been detected and will be mentioned in their proper places.

Among the species described from California, etc., will be found several genera not before known from the western slope, enough to warrant the belief that those regions are, at least, as well supplied as the Atlantic slope. The dearth of species from our Southern States is remarkable and is the result, probably, of a want of thorough exploration rather than a real absence.

Fully coinciding in the views of Dr. Leconte, the following sub-families are adopted:

Abdomen with more than five segments.....**Psephenidæ.**
Abdomen with five segments only:
Anterior coxæ transverse; trochantin distinct.....**Parnidæ.**
Anterior coxæ rounded; trochantin invisible.....**Elmidæ.**

Sub-Family PSEPHENIDÆ.

The characters of this sub-family have been so fully given by Dr. Leconte (loc. cit. and *Class Col. N. A.* p. 115) that it is not necessary to enter into details here. Two errors, however, need correction.

In examining the specimens in my cabinet I was unable for a long time to detect the sixth segment spoken of by Dr. Leconte, which shows itself on each side only, between the fifth and seventh segments; those in the cabinet of Dr. Leconte exhibited the additional segments very plainly. Dissection indicates that those with six segments only are females, while the males have an additional segment between the last and the fifth. Accompanying this are certain antennal differences not before noticed. The antennæ of the male are distinctly *sub-serrate* and the last joint at least *one half longer* than the preceding, those of the female are almost *moniliform* and the last joint *not longer* than the preceding. The hind coxæ are said to be contiguous (*Proc. Acad.* 1852, p. 41, and *Class Col. N. A.* p. 115), this I find not to be the case either in this sub-family or the next, at least, so far as our genera are concerned.

PSEPHENUS, Hald.

Psephenus Hald. Melsheimer Catalogue, p. 34.
Eurypalpus. Lec. Proc. Acad. 1852, p. 41.

P. Lecontei, Lec. (*Eurypalpus*) loc. cit; *trentonensis* Zimm. Trans. Ent. Soc. 1869, p. 259.

The male has the thorax much less opaque than the female, sometimes brownish black in color, in the latter sex the thorax is always deep black and without lustre; the elytra vary in color from black to brownish. The *P. trentonensis*, Zimm., is not distinct from the other, and Dr. Leconte informs me that he published the description of Dr. Zimmerman's in deference only to the very positive opinion of its author, having doubts in his own mind of its being distinct. Length .18.—24 inch; 4.5—6 mm.

Occurs abundantly at Niagara and Trenton Falls, and specimens have been received from Illinois, Rhode Island and Pennsylvania.

P. Haldemani, n. sp.

Similar to *Lecontei* and differs in being more depressed and with less distinctly punctured elytra the bases of which have a brownish testaceous space extending from the humeri to the suture, where it is broader. The head, instead of being concave, as in the preceding species, has two impressions, as if the cavity in the preceding species were divided by a longitudinal obtuse ridge. The femora are yellowish and the tibiæ and tarsi brownish.

Length .15 inch; 3.75 mm.

Two females from the Peninsula of California, collected by Mr. Gabb.

Sub-Family PARNIDÆ.

Two tribes form this sub-family.

Head not entirely retractile, free beneath.....**Larini.**
Head retractile, protected beneath by prosternal lobe.....**Parnini.**

Tribe I.—*Larini.*

Two genera are included in this tribe, one of which is Californian, the other European.

LARA, Lec.

Lara, Lec. Proc. Acad. 1852, p. 42.

L. avara, Lec. loc. cit.

Sufficiently detailed generic and specific descriptions have been given by Leconte (loc. cit. and *Class Col. N. A.*, p. 116), and it is unnecessary to add anything further. Length .30 inch; 7.5 mm.

From the circumstances attending the reception of this insect I am inclined to believe that the high mountain regions of the upper Sacra-

mento Valley form the habitat of this insect. I am quite certain that I saw a living specimen adhering to a log under water in a swift stream near Fort Crook.

Tribe II.—*Parnini.*

Three genera only represent this tribe in our fauna, distinguished as follows:

Body rounded; eyes not hairy.
  Antennæ distant; second joint large; last joint of maxillary palpi securiform.....**Lutrochus.**
Body elongate.
  Antennæ approximate; eyes hairy; last joint of maxillary palpi elongate.....**Pelonomus.**
  Antennæ distant; eyes glabrous; last joint of maxillary palpi elongate.....**Helichus.**

An examination of all the genera of this tribe has shown me that the hind coxæ are very distinctly separated, and cannot be called subcontiguous, even in *Parnus*, as has been done by Lacordaire, (Genera II, p. 504). The genus *Lutrochus* may be known by the form of the epipleuræ which are suddenly lobed in front. The second antennal joint is large in *Helichus* and small in *Pelonomus*. All have the outer joints of the antennæ (4–11) distinctly lamellate, with the joints not greatly varying in size either in length or width.

LUTROCHUS, Erichs.

Lutrochus, Erichs. Ins. Deutsch. III, p. 509.

L. luteus, Lec. Proc. Acad. 1852, p. 42.

A small, oval insect densely clothed with luteous hair and with an æneous tinge. Length .12 inch; 3 mm.

Fort Gates, and McLennan Co., Texas, Belfrage.

PELONOMUS, Erichs.

Pelonomus, Erichs. Ins. Deutsch. III, 510.

Resembles in form the European *Parnus*, but may be easily known superficially by the absence of any lateral thoracic grooves.

P. obscurus, Lec. Proc. Acad. 1852, p. 42.

Length .26 inch; 6.5 mm. Occurs in the Southern and Western States.

HELICHUS, Erichs.

Helichus, Erichs. Ins. Deutsch. III, p. 510.

A careful examination, especially of the larger species of the genus shows the tibial spurs to be quite distinct.

Our species may be distinguished as follows:

Last abdominal segment densely pubescent:
  Spurs of tibiæ quite distinct but small.....**productus.**

Last abdominal segment nearly nude, frequently ferruginous in color:
Body finely and evenly, sericeous pubescent.....**lithophilus.**
Body coarsely pubescent.*
Basal thoracic region and sutural space glabrous.....**fastigiatus.**
Surface everywhere pubescent.
Alternate interspaces more convex.....**striatus.**
Interspaces flat.....**suturalis.**

H. productus, Lec. Proc. Acad. 1852, p. 43.

Our largest species, easily known by the last segment of the abdomen being as densely coated with scaly hairs as the other segments. The thorax is nearly square in the males and broader than long in the females; surface rather coarsely punctured and sparsely pubescent. Elytra elongate, subparallel on the sides, striæ firmly impressed, with not large punctures, surface more densely pubescent on the sides. The sutural space, which becomes wider behind, is less densely pubescent, and the hairs are finer, more silken and more easily removed. In this and the other California species the surface becomes coated with a whitish material, so thick and dense as almost completely to hide the pubescence. This is especially the case in those specimens found in streams the waters of which are strongly impregnated with earthy salts, and in specimens taken near the end of the season the legs have been found so completely covered with this incrustation as almost to interfere with their motion. Length .24—.32 inch; 6—8 mm.

This species is widely distributed occurring from near Santa Barbara, in the Coast Range, to Tejon, thence in the streams to Yuma, and, in places, along the Gila and San Pedro Rivers, of Arizona, as far as Camp Grant. The original specimens were found at San Diego and Mr. Gabb brought others from the Peninsula.

H. lithophilus, Germ. (*Elmis*). Ins. Spec. Nov. 88; Lec. Proc. Acad., loc. cit.

This species is too well known to need comment. It may be readily known by the dense and evenly distributed sericeous coating with a slightly bronzed lustre. The legs are more glabrous than on other species and, as in all those which follow, the last abdominal segment is almost entirely deprived of its pubescence and is reddish in color. The profile of the elytra from the scutellum to apex is a regular curve. Length .20 inch; 5 mm.

* The pubescence is variable in its quality and distribution. That along the suture, being finer, is frequently rubbed off, either by the motions of the insect when alive or by friction against others in transportation. In one species there is a basal thoracic and a sutural space of the elytra normally devoid of pubescence.

Specimens in my cabinet are from Pennsylvania, Iowa and Canada West, the latter through the kindness of Mr. Johnson Pettit.

H. fastigiatus, Say (*Parnus*), Long's Exped. II, 275; *basalis* Lec., Proc. Ac. loc. cit.

The basal region of the prothorax is rather suddenly depressed, smooth, shining and entirely without pubescence. The sides of the elytra are densely pubescent while a sutural space is quite smooth and with but few hairs. This space is broader at the base, gradually narrowing to the middle of the elytra, then widening, and forming an oval space not reaching the tip. All the numerous specimens before me exhibit this, and, in confirmation of the fact that the absence of hairs is here not accidental, there are very few punctures and the surface is quite shining. The last abdominal segment is as in the preceding species but less ferruginous. Length .20—.22 inch; 5—5.5 mm.

Occurs from Canada to the District of Columbia and Illinois.

H. striatus. Lec. Proc. Acad. 1852, 43; *foveatus* Lec. loc. cit.

The latter species does not appear to have any definite character by which it can be separated. The unique specimen on which it is founded has not the alternation of the interspaces as well defined, and is, moreover, slightly more elongate. But I am persuaded to overlook these variations from the fact of still greater deviation occurring in *productus*, with, however, intermediate forms uniting them. Specimens have been sent me by Mr. Jas. Behrens from the neighborhood of San Francisco, which cannot be separated from the true type. This species may be known by the alternate interspace being more elevated. Length .22—.24 inch; 5.5—6 mm.

Not abundant in the Eastern States and Canada, but greater numbers prevail in the Western States. The California specimens have been received in abundance, and, judging from my experience in collecting *productus*, when found occur in countless numbers. I have seen several hundred on a stone not more than four inches square.

H. suturalis. Lec. Proc. Acad. loc. cit.; *gilensis* Lec. loc cit.; *æqualis* Lec. Proc. Acad. 1854, p. 81.

These three species were founded on unique specimens from widely separated regions. Collections made by myself and others in California and Arizona demonstrate the fact that these should all be united, as a perfect series, including the types, can now be formed. The sutural elytral space in specimens devoid of incrustation, has the hairs rather more sparsely placed and paler in color; the form of the space being similar to that described in *fastigiatus*. The thorax is, however,

regularly convex and pubescent. The last abdominal segment deprived of hair and more or less ferruginous. In all the specimens before me there is a subtriangular space near the middle of the anterior thoracic margin, smoother and less pubescent. In an examination of the typical specimens, *æqualis* and *gilensis* are exactly similar in form, the latter being coated somewhat with earthy matter while the former is clean. The type of *suturalis* is in rather bad condition, being densely coated; is broader in form than the others but resembling the female specimens collected in California, and which without doubt are referable to *æqualis*. Length .20 inch; 5 min.

Occurs with *productus* but extends further east than specimens of the latter have been found.

Sub-Family Elmidæ.

The anterior coxæ are rounded and without trochantin. The antennæ are slender but slightly thickened at tip. The hind coxæ are more widely separated than in the preceding sub-family, and the legs longer and more slender. The genera and species are more numerous and, with the exception of *Elmis* and *Ancyronyx*, have representatives on the Pacific Slope.

The genera represented in our fauna may be thus distinguished;

Head protected beneath by a prosternal lobe.
  Antennæ 11 jointed.
    Anterior tibiæ pubescent internally.....**Elmis.**
    Anterior tibiæ glabrous internally.....**Stenelmis.**
  Antennæ 6-jointed.....**Macronychus.**
Head free; posternum not lobed; anterior tibiæ glabrous internally.
  Antennæ 11-jointed.....**Ancyronyx.**

In the above genera are comprised all the species in our fauna. *Limnius* has been united with *Elmis* as not being sufficiently distinct, none of the special characters assigned to it having that degree of permanence entitling them to generic value. The line between a rounded and elongate oval scutellum is not sufficiently distinct, as has already been shown by Dr. Leconte (*Proc. Acad.* 1866, 380). The degree of sinuation of the basal line of the thorax is equally valueless with the general form; the "tout ensemble" is also a faulty guide, as *Elmis*, both in Europe and America, appears rather heterogeneous in the aspect of the different species. The first two genera have rather numerous species, the third but two, one of them being Californian, while the one species of *Ancyronyx* still remains without a congener.

ELMIS, Latr.

Elmis, Latr. Hist. Nat. cl. Fourm, 1802, p. 396.
Limnius, Müller, Illig. Mag. V, 1806, p. 188.

Our species are as follows:—

Thorax with even surface; no elevated lines:
- Thorax lutcous or slightly ferruginous; scarcely broader than long.....vittatus.
- Thorax luteous, apical and basal margins blackish; broader than long.....bivittatus.
- Thorax black, slightly bronzed, scarcely broader than long.quadrinotatus.

Thorax with a distinct lateral elevated line:
- Line extending from base to middle only; elytra without elevated lines.
  - Elytra with two oblique vittæ.....elegans.
  - Elytra with one oblique vitta..... { fastiditus. / ovalis.
  - Elytra with a humeral and sub-apical rounded spot.....quadrimaculatus.
- Line entire, extending from base to apex:
  - Elytra smooth, shining, with lateral elevated lines:
    - Disc of thorax with transverse impresssion.....glaber.
    - Disc of thorax smooth..... { nitidulus. / latiusculus.
  - Elytra opaque:
    - Without lateral elevated lines.....moestus.
    - With lateral elevated lines.....abnormis.

Thorax with surface obliquely plicate:
- Sides of thorax sinuate..... { pusillus. / similis.
- Sides of thorax rounded from base to apex.....ferrugineus.

E. vittatus, Mels. Proc. Acad. 1844, p. 99; Lec. Proc. Acad. 1854, 217.

Length .12 inch; 3 mm.

Middle States.

E. bivittatus, Lec. Proc. Acad. 1852, p. 44.

Length .14 inch; 3.5 mm.

Collected in the upper Mississippi River.

E. quadrinotatus, Say, Journ. Acad. V, 187; Lec. Proc. Acad. 1852, p. 44.

Length .09 inch; 2.25 mm.

Middle States and Canada, also Fort Wingate, N. M.

These three species are closely allied and are difficult to distinguish in description. All agree in a similarity of coloration, an elongate form and, consequently, a more decidedly elongate scutellum. They have also the prosternal lobe much less prominent than in the species which follow, the parts of the mouth are less concealed beneath, the head more prominent and the front less deflexed. They differ as follows; *bivittatus* is the larger form, its thorax is decidedly (at least one-third) broader than long, more convex and with the apical and basal margins and also the sides blackish; the sides are rounded and near

the hind angles slightly sinuate. The elytra may be described as black with a yellow or luteous oblique stripe, widest at base, extending from the humeri to the apices of the elytra. *Vittatus* has the thorax gradually narrower from base to apex, feebly rounded on the sides and less convex than in the preceding species, and much less broad proportionately. The oblique stripe of the elytra does not attain the apex. The thorax is colored similarly to *bivittatus*, but the apical and basal regions are not as distinctly blackened. *Quadrinotatus* is the smallest and most slender species. The thorax is similar in shape to *bivittatus* but entirely bronzed. The punctures of the elytra are proportionately coarser. The oblique stripe is occasionally entire but not attaining the apex, usually interrupted at middle, forming a humeral spot and a stripe in the posterior third of the elytra.

E. elegans, Lec. (*Limnius*) Proc. Acad. 1852, p. 43.

With this species commences a group having an elevated line extending from the basal line of the thorax to near the middle. *Elegans* may be easily distinguished from any other of the group by its rather more slender form and by its elytral ornamentation; the elytra are black, slightly bronzed, with an oblique luteous band, starting at the humerus, extending inward to the second interspace and along this interspace to about the middle of the elytra; another oblique band starts from near the middle of the lateral margin, runs inward toward the apex without attaining it. Length .11—.12 inch; 3 mm.

Occurs in Vermont.

E. fastiditus, Lec. (*Limnius*) Agass. Lake Superior, 217; Proc. Acad. 1852, 43.

The sides of the thorax gradually converge and are scarcely rounded. The form is more elongate and less convex than in *ovalis*, and the elytral interspace more distinctly punctured. Color bronzed black, with an entire oblique luteous stripe extending from the humerus nearly to the apex. The suture is also luteous in many specimens. The legs are black. Length .11 inch; 4 mm.

Occurs in the Lake Superior region.

E. ovalis, Lec. (*Limnius*) New Species, 1863, p. 74.

Similar in outline to the preceding but slightly broader, more convex and shining and with the elytral interspaces scarcely punctured. The sides of the thorax are distinctly rounded and the disc more convex. The oblique stripe seen in *fastiditus* is not entire in this species, always interrupted at middle and much darker in color. Legs black. It is similar in length to *fastiditus*.

Occurs in South Eastern Pennsylvania.

E. quadrimaculatus, n. sp.—Elongate oval, black, not bronzed, shining; thorax broader than long, sides very feebly rounded, gradually converging to apex, disc very sparsely punctured. Elytra oval, sides feebly rounded, above moderately convex, with distinct striæ of rather large punctures becoming smaller towards the apex, interstices scarcely punctured; a large humeral (red when living) luteous spot, another more elongate near the apex of each elytra. Legs luteous. Length .08 inch; 2 mm.

Besides the groove limited on the outer side by a slight carina seen in the other species of the group, this has a slight rounded impression on each side of the scutellar region of the base of the thorax. It may be known from the two preceding species by its more elongate form, deeply punctured elytral striæ, and very feebly punctured thorax. The two spots on each elytron never tend to the formation of a stripe.

In the waters near Fort Crook, California.

E. glaber, n. sp.—Elongate oval, rather robust, black, feebly shining. Thorax slightly broader than long, sides feebly sinuate in front, rounded at middle and slightly narrower at base, disc with two entire lines extending from base to apex and a transverse impression at middle between the the two lines; space between the elevated lines smoother and less punctured, sides more opaque and more coarsely punctured. Elytra oval, sides feebly rounded with striæ of moderately large punctures, less distinct at apex, interstices flat, feebly punctured; fifth interspace carinate for a short distance, seventh carinate from humerus to near the apex. Legs and antennæ brownish. Length .08 inch; 2 mm.

The space between the fifth elytral interspace and the margin is more distinctly punctured and opaque than the middle of the elytra. The humeri have a faintly paler appearance. The species may be easily recognized by the entire lateral thoracic carina, the transverse impression, and the two lateral elytral carinæ.

San Pedro River, Arizona. One specimen only taken.

E. nitidulus, Lec. Proc. Acad. 1866, p. 380.

Length .05 inch; 1.25 mm.

New York.

E. latiusculus, Lec., loc. cit.

Length .06 inch; 1.5 mm.

Mountains of Pennsylvania.

The descriptions of Dr. LeConte are so recent and explicit that it is not deemed necessary to repeat them here.

E. moestus, n. sp.—Elongate sub-parallel, brownish, opaque. Thorax subquadrate, very slightly broader behind, sides moderately rounded and very slightly sinate near the hind angles; disc convex with two lateral elevated lines, surface opaque and granulate. Elytra elongate, subparallel, moderately convex, sinuate at apex; surface distinctly striate, striæ with rather large distant feebly impressed punctures, interstices flat, granulately rugose. Under surface granulate, last abdominal segment broadly transversely impressed·

Middle tibiæ with a slight brush of erect hairs at the upper third. Length .16 inch; 4 mm.

The elytra are slightly sinuate near the apex; the marginal ridge does not attain the tip, and the apices appear as if slightly prolonged. There is also a short scutellar stria here present not evident in the other species. The characters above given with those in the table will enable the species to be readily recognized.

One specimen from the San Pedro River, Arizona.

E. abnormis, n. sp.--Elongate, sub-parallel, brownish, opaque. Thorax slightly longer than broad, moderately convex, densely punctured, a lateral carina and a median longitudinal impression not reaching the apex nor extending beyond three-fourths the length of the thorax; sides moderately rounded at middle, feebly sinuate beyond. Elytra subparallel, slightly flattened on the disc, distinctly striate, striæ coarsely and closely punctured. Third interspace carinate at base for one-third its length, fifth carinate for one-half the length of the third, sixth and (?) seventh carinate nearly their entire length, interspaces and carinæ finely granulate. Under surface sparsely granulate. Last abdominal segment with an acute incision on each side. Length .16 inch; 4 mm.

San Pedro River, Arizona; Peninsula of California. Coll. by Mr. Gabb.

This species may be recognized by the characters above given. It resembles greatly our species of *Stenelmis* in its general aspect, but the unmistakable line of pubescence on the anterior tibiæ indicates its generic place notwithstanding the fact that its appearance caused me, until the present, to place it with *Stenelmis* in my cabinet.

E. pusillus, Lec. (*Stenelmis*) Proc. Acad. 1852, 44; Zimm (*Limnius*) Trans. Am. Ent. Soc. 1869, p. 259.

Middle States and Canada.

E. similis, n. sp. Thorax slightly longer than broad, sides moderately rounded at middle, slightly sinuate in front, and near the hind angles. Disc with two broad, oblique folds converging backwards and joining a longitudinal median fold. Elytra sub-parallel, distinctly striate, striæ with coarse punctures, towards apex scarcely less distinct; near apex slightly sinuate as in *abnormis*. Second interval with a short carina, fourth interval carinate, extending three-fourths, sixth carinate, extending from humeri nearly to apex. Length .08 inch; 2 mm.

This species and *pusillus*, Lec., are so closely allied as to be with difficulty separated. In *similis* the punctures are more evident at apex of elytra, the carinate intervals more acute, the thorax more sinuate in front. In *pusillus* there is a distinct humeral and sub-apical paler spot, in this species the elytra are of a uniform brownish black color. Both species have a similar formation of the elytral apex as in *abnormis*, and the last abdominal segment has a similar incisure on each side. *Pusillus* and *similis* are similar in size.

Occurs in the San Pedro River, Arizona.

E. ferrugineus, n. sp.—Elongate, sub-parallel, opaque, ferruginous. Head black, thorax broader than long, moderately convex, coarsely but not densely punctured; a lateral carina on each side and a short, longitudinal impression at middle of disc; sides moderately rounded, feebly sinuate near the hind angles. Elytra subparallel, moderately convex, with striæ of moderately large punctures not attaining the tip, intervals flat, the third, fifth and seventh carinate, the third very short, the fifth extending nearly three-fourths, the seventh nearly attaining the apex. Apex of elytra as in the two preceding species. Abdomen coarsely punctured, last segment as in *similis*. Length .10 inch; 2.5 mm.

Collected by Mr. Belfrage, Texas.

Easily known by the characters given. The thorax is almost a perfect reproduction in miniature of that of *moestus*, except that it is finely crenulate or almost serrate.

STENELMIS, Dufour.

Stenelmis, Dufour, Ann. Sc. Nat. Ser. II, 1835, Zool. p. 158.

S. linearis. Zimm. Trans. Am. Ent. Soc. Phil. 1869, 259.

Our smallest species, easily known by the luteous elytral vitta and the total absence of any elevation of the second elytral interval at base. The carina of the fifth interval is feebly marked at humerus. The sides of the thorax are nearly straight or at least feebly sinuate, the hind angles acute but not prominent, the discal channel rather deep and smooth at bottom; on each side a short lateral carina within which is a smooth space. Length .10 inch; 2.5 mm.

South Carolina, collected by Dr. Zimmerman.

This may be the species described by Motschulsky (*Etudes* 1859, p. 50), under the name *humerosus*, and, if so, the latter should have priority. The description of this and others is so vague as to leave considerable doubt of their identity.

S. sinuatus, Lec. Proc. Acad. 1852, p. 44.

The front angles of the thorax are more prominent. The sides in front are nearly straight at the anterior third and slightly converge backwards, then slightly rounded and feebly sinuate near the hind angles. The second elytral interval is carinate at base. A very faint humeral and sub-apical paler spot is seen. Length .14 inch; 3.5 mm.

One specimen, Tolula, Georgia.

S. crenatus, Say (*Elmis*) Long's Exped. II, 275; Lec. Proc. Acad. 1852, 44.

Our common eastern species, easily known by its broader thorax with more strongly rounded sides. The disc is channelled and on each side three obtuse tubercles. The entire surface is opaque, and

its general aspect more depressed than any other of our species.

Length .14 inch; 3.5 mm.

Abundant in the waters of Pennsylvania.

S. bicarinatus, Lec. Proc. Acad. 1852, 44.

Form elongate, elytra distinctly wider behind the middle. Thorax parallel in front, then slightly rounded, becoming wider, then parallel to base; hind angles rectangular; dorsal channel and an oblique groove on each side distinct. Second interval distinctly but feebly carinate at base, lateral carina not prominent; disc of elytra moderately convex, with distinct striæ, which are deeply punctured at base, becoming gradually more faint towards apex. The luteous stripe is distinct but not pale. Length .14—.16 inch; 3.5—4 mm.

Occurs in Ohio.

S. quadrimaculatus, n. sp.

Similar in form to *crenatus* but differing as follows:—Thorax more elongate, sides less rounded. Elytra more convex in both directions; second interval with a short basal carina, lateral carina very feeble; disc with striæ of very large deep punctures, less strong at apex but not evanescent. Humeri with a rounded red spot and a short sub-apical stripe. Legs black, apex and base of tibiæ, tarsi, and antennæ ferruginous. Length .14 inch; 3.5 mm.

At the middle of the base of the thorax on each side of the scutellum are two small, smooth, puncture like spots, these are seen also in the next species. The lateral tubercles of the thorax between the dorsal channel and the margin are here very distinct, and in the space enclosed between them and the channel is a rather deep impression. In form this is the most robust of our species and, with the exception of *linearis*, has the lateral carina of the elytra least distinct.

One specimen. Vermont.

S. vittipennis, Zimm. Trans. Am. Ent. Soc. 1869, 259.

Resembles *bicarinatus* but is less convex. The thorax is similar but the hinder two-thirds are rounded in place of being parallel, the hind angles are consequently less rectangular. The oblique groove described in *bicarinatus* is also quite evident here. In some specimens the stripes are quite dark, and scarcely evident, in others bright adding to the beauty of the insect. With the exception of *linearis* is our most elongate species. Length .14 inch; 3.5 mm.

Illinois, South Carolina and Texas.

MACRONYCHUS, Müller.

Macronychus, Müller, Illig. Mag. V, 1806, p. 207.

M. glabratus, Say, Journ. Acad. V. p. 187; Lec. Pr. Ac. 1852, 44; *lateralis* Mels. Proc. Acad. 1844, p. 99; Lec. Proc. Acad. 1854, p. 217. (The last reference being the correction of the synonymy.)

This species has a thorax longer than wide, convex, glabrous, scarcely punctured and feebly pubescent. The sides in front are nearly straight, gradually diverging from the front angles, then feebly rounded and slightly sinuate near the hind angles. The elytra are glabrous, somewhat broader behind the middle, striate with moderate punctures at base, becoming fainter and almost impunctured at apex, interspaces moderately convex at base especially the second and fourth, seventh strongly carinate, extending three-fourths the length of the elytra. The space between the carina and the margin of the elytra is densely pubescent with sericeous yellow hairs. Legs elongate. Length .14 inch; 3.5 mm.

Occurs in Pennsylvania.

M. parvulus, n. sp.—Elongate, subparallel, black, shining. Head coarsely punctured and pubescent; thorax sub-quadrate, convex, with a slight median impression and a lateral carina, sides rounded feebly from base to apex. Elytra elongate, subparallel, moderately convex, with striæ of large punctures becoming smaller towards the apex; interspaces moderately convex, fourth, sixth and seventh carinate and crenulate on top, the first two nearly attaining the apex of the elytra which is finely serrate. Legs moderate, not long. Length .10 inch; 2.5 mm.

A curious little species resembling, at first sight, an *Elmis* near *ferrugineus*. Easily recognizable by the generic characters. From *glabratus* it may be known by its smaller size, less convexity, more strongly punctured striæ, and by the two nearly entire lateral carinæ of the elytra. The thorax is also shorter and regularly rounded, although feebly, from base to apex. The base of thorax is slightly broader than the apex. The elytra are much less convex and have not the lateral sericeous space. The legs are usually brownish.

Occurs at Fort Tejon, California.

ANCYRONYX, Erichs.

Ancyronyx, Erichs, Ins. Deutsch. III, 1847, p. 522.

A. variegatus, Germ. (*Macronychus*) Ins. Nov. 89; Sturm Cat, II, 63, pl. 2, fig. 12: *cinctus* Say (*Elmis*) Journ. Acad. V. 186.

This insect is easily known by the generic characters given in the table. The legs are long, slender and spider-like. The head prominent, and not protected beneath by a prosternal lobe. Color of body black, thorax with an apical and basal yellow margin, elytra with a

yellow oblique stripe extending from the humerus to the middle of the elytra near the suture then curved and extending nearly directly outwards toward the margin; another short, longitudinal stripe near the suture at apex. Tarsi and under side of femora black, tibiæ and upper edge of femora luteous. Length .12—14 inch; 3—3.5 mm.

Specimens are from Vermont, Middle States and Tennessee.

The following are unknown to me:—

Stenelmis elongatus, Motsch. Etudes. 1859, p. 51.
Stenelmis humerosus, Motsch. idem. p. 50.
Stenelmis sordidus, Motsch. idem. p. 51.

———o———

Notes on some Genera of COPROPHAGOUS SCARABÆIDÆ of the United States.

BY GEO. H. HORN, M. D.

COPRIS, Geoff.

Our species are but few in number and seem hardly to call for a separate essay, but as several of them are closely allied and their descriptions widely separated, the present paper may be of advantage to many.

Two sub-genera are indicated in our fauna.

PINOTUS, Erichs, (Archiv. 1847, I. p. 109).—Each elytron 7-striate; hind tibiæ dilated at apex, outer edge crenulate, never with an oblique ridge or tooth, spur obtuse or emarginate at apex; front parabolic, genæ in front of eye oblique, angle obtuse.

This subgenus is identical with Haldeman's *Brachycopris*.

COPRIS. Auct.—Each elytron 8-striate: hind tibiæ compressed, outer edge with an oblique ridge or tooth near the middle, spur long acute; front semicircular, genæ rectangularly produced, angle acute.

C. (Pinotus) carolinus, Linn. (*Scarabacus*) Syst. Nat. I. 2, p. 545; Drury, Exot. Col. I, p. 77, pl. 35, fig. 2; Hald. (*Brachycopris*) Proc. Acad. III, 125.

Our largest species. This species may be further distinguished from those of the next subgenus by the presence of a moderately deep excavation on the underside of the prothorax within the anterior angle, for the lodgment of the antennal club in repose; also, by the absence of any elevated line proceeding from the coxæ outwards. Length .80—1.10 inch; 20—28 mm.

Abundant Southwardly and Westwardly of Pennsylvania.

Our remaining species belong to the subgenus *Copris*.

Thorax opaque, densely, coarsely and evenly punctured.....**anaglypticus**, Say.

Thorax more or less shining, very unevenly punctured:

Clypeus obtusely notched at middle.....**mœchus**, Lec.

Clypeus broadly emarginate at middle, between two small, distant, obtuse teeth.....**remotus**, Lec.

Clypeus acutely and rather deeply notched between two approximate rounded teeth.....**minutus**, Drury.

In addition to the characters given above all our species of this sub-genus have an elevated ridge extending from the outer angle of the anterior coxæ to near the anterior angle of the prothorax, while the depression for the antennal club seen in *Pinotus* is not evident here.

C. anaglypticus, Say, Journ. Acad. III, p. 204.

Easily known from all the species of the subgenus by the dense, coarse punctures of the thorax. The clypeus is acutely notched at middle, the angles of the notch obtusely rounded and a slight sinuation on the outer side of each. The middle of the anterior edge of the prosternum is armed with a tooth, obtuse at tip, which arises suddenly. Elytral striæ broad, punctures transverse. Length .52—.70 inch; 13—18 mm.

Abundant from Canada to Texas.

In the southern and western specimens the horn of the head of the male is frequently long. In females or in more northern forms the horn is very short or reduced to a mere tubercle.

C. mœchus, Lec. Proc. Acad. 1854, p. 222.

Similar to the preceding, but differs in having the thorax much more sparsely and irregularly punctured and not opaque. The clypeal emargination is a broad notch. The middle of the anterior edge of the prosternum is acutely produced but not in the manner of a suddenly formed tooth. Length .76 inch; 19 mm.

Texas.

C. remotus, Lec. Proc. Acad. 1866, p. 581.

The middle of the anterior edge of the prosternum is broadly and obtusely produced. The clypeus is slightly emarginate at middle between two distant, small obtuse teeth. The hind tarsi are shorter and broader than in any of our species, the joints 2, 3 and 4 being as broad at distal end as long, while in all our other species they are nearly twice as long as broad. Surface shining, thorax coarsely punctured, nearly smooth at base. Length .54—.64 inch; 13.5—16 mm.

Texas and Matamoras, Mexico.

C. minutus, Drury, (*Scarabaeus*) Exot. Ins, p. 78, pl. 35, fig 6; *Ammon* Fab. (*Copris*) Entomologia I, 44; Olivier, Ent. I, 3, p. 123, pl. 12, fig. 111; *Lar* Fab. Mantis 1, p. 13; *reflexus* Panz. Fauna Am. Bor. p. 7; *silenus* Fab. Ent. 1. p. 18. (The latter was described from an erroneous locality.)

Easily known by its small size and smooth clypeus. The front is acutely and rather deeply notched, the angles of the notch forming obtusely rounded teeth, bounded exteriorly by a slight sinuation. The prosternum in front has a rather long acute spine arising suddenly. The vertex is usually tuberculate though often with a short, slender horn. Length .32—.44 inch; 8—11 mm.

Abundant from Canada to Florida and Texas, and to the base of the Rocky Mountains.

CANTHON, Hoffm.

The present short review has been prepared in order to place before the American student the means of recognising our species, as well as to enable certain of those least known to be recognised abroad. In his admirable monograph of this genus, Harold has been unable to place certain of our species in their systematic positions, as many of the characters made use of by him have not been previously recognized. In this monograph all our species known to him have been correctly diagnosed.—(*Berlin Entom. Zeitschrift*, 1868.)

Our species may be arranged as follows:—

Hind tibiæ with two spurs:
  Clypeus bidentate; body smooth, shining, deep blue.....**indigaceus**, Lec.
  Clypeus 6-dentate; body sparsely granulate, opaque, black...**nigricornis**, Say.
Hind tibiæ with a single spur:
  Hind femora coarsely punctured and setigerous:
    Thorax densely, not coarsely, granulate.....**praticola**, Lec.
    Thorax sparsely and coarsely punctured.....**puncticollis**, Lec.
  Hind femora smooth:
    Hind tibiæ distinctly arcuate, gradually broader to apex.....**cyanellus**, Lec.
    Hind tibiæ either straight or very feebly arcuate:
      Clypeus acutely 6-dentate; emargination between middle and hinder tooth deep:
        Body nearly smooth.....**probus**, Germ.
        Body opaque and granulate:
          Finely and densely granulate; lateral striæ of elytra deeper.....**ebenus**, Say.
          Coarsely and sparsely granulate; lateral striæ of elytra equal.....**depressipennis**, Lec.
      Clypeus 4-dentate, without lateral deep incisure:
        Humeral stria of elytra never carinate, often absent:
          Thorax coarsely, elytra less coarsely punctured, punctures squammuligerous, surface shining, eyes large.....**perplexus**, Lec.
          Thorax punctured or granulose, surface black opaque, not squammuligerous, eyes small.....**simplex**, Lec.
        Humeral stria distinctly carinate at base.....**lecontei**, Harold.
      Clypeus bidentate, hind tibiæ feebly arcuate (especially in ♂):
        Surface smooth or feebly punctured.....**viridis**, Beauv.

Surface opaque, granulate:
Eyes larger, antennæ ferruginous.....**vigilans**, Lec.
Eyes smaller, antennæ dark brown:
Thorax finely rugose and punctured.....**chalcites**, Hald.
Thorax distinctly granulate.....**lævis**, Drury.

C. indigaceus, Lec. Proc. Acad. 1866, p. 280.

Easily known by its deep blue color, smooth surface, and by having two spurs to the hind tibiæ. Length .40 inch; 10 mm.

Fort Whipple, Arizona.

C. nigricornis, Say, (*Atcuchus*) Journ. Acad. III, p. 207; Lec. (*Canthon*) Col. Kansas, p. 10.

Body black opaque, sparsely granulate. Clypeus 6-dentate. Hind tibiæ with two spurs. Length .25—.35 inch; 6—9 mm.

Texas, Kansas, Middle States and Georgia.

C. praticola, Lec. Col. Kansas, p. 10.

Similar in form and sculpture to the preceding, but more elongate and less narrow behind. Differs especially in the hind femora being coarsely punctured and setigerous. Length .25—.38 inch; 6.5—9.5 mm.

Kansas.

C. puncticollis, Lec. Proc. Acad. 1866, p. 381.

Smaller, smoother and less opaque than *praticola*, Lec. The thorax is coarsely and sparsely punctured. Hind femora punctured and setigerous. Length .24—.28 inch; 6—7 mm.

Cape St. Lucas, Lower California.

C. cyanellus, Lec. Col. Kansas, p. 11; *speciosus* Harold, Berl. Ent. Zeitschrift, 1868, p. 41.

Greenish blue, smooth, shining. Hind tibiæ arcuate. Clypeus four toothed, the two middle teeth being very slender, the lateral teeth broad and triangular. Length .33—.37 inch; 8.5—9.5 mm.

Mexico (Harold), Texas (Ulke).

C. probus, Germar, (*Ateuchus*) Spec. Nov. p. 98; *abrasus* Lec. (*Canthon*) Col. Kansas p. 11.

Hind femora smooth, impunctured, tibiæ straight. Clypeus six-dentate, teeth acute, incisure between the hinder tooth and the one immediately in front of it deep. Surface nearly smooth. Length .23—.25 inch; 6—6.5 mm.

I have no hesitation in uniting the species of Leconte to that of Germar, and although some slight differences exist between the description and Leconte's unique, it must be remembered that both species have been described from single specimens.

Georgia.

C. ebenus, Say, (*Ateuchus ebenus*) Journ. Acad. III, 208.

With a clypeus as in *probus* this species has a very opaque surface rather densely covered with coarse granules. The striæ of the elytra are barely distinct on the disc and quite deep toward the sides. Length .30—.42 inch; 7.5—11 mm.

Texas, Kansas and Tamaulipas.

C. depressipennis, Lec. Col. Kansas, p. 10.

Similar to the preceding, but very much less coarsely granulate and opaque. Striæ of elytra similar to each other. Length .32—.36 inch; 8—9 mm.

Georgia.

C. perplexus. Lec. Journ. Acad. Ser. II, vol. I, p. 85.

Easily known by its small size, brown bronzed, shining surface, coarsely punctured thorax, each puncture of the thorax and elytra bearing a small, recumbent, scale-like hair. Clypeus 4-dentate. Hind tibiæ slightly arcuate. Length .18—.20 inch; 5—5.5 mm.

Texas.

C. simplex, Lec. Pacif. R. R. Rep. App. I, p. 41; *corvinus* Harold, Berl. Ent. Zeitschrift, 1868, p. 129.

Easily recognizable by the characters given in the table. I cannot agree with Harold in separating *corvinus* as distinct. Several distinct varieties may be noted, however;

simplex.—Surface entirely opaque, thorax not punctured.—Oregon.

corvinus.—Surface entirely opaque, thorax punctured.—California and Arizona.

militaris.—Surface opaque, thorax less punctured, humeri red.—Cal. (Tejon and Visalia.)

humeralis.—Surface less opaque, thorax less punctured and shining; humeri polished.—California (Coast Mts. South).

The transition from those with impunctured thorax and those in which it is so punctured, is so gradual as not to be at all defined. The slight transverse plication of the elytra behind the humeri is an individual character, some have it and many more are without it.

Harold appears to have known but one specimen of *simplex.* My own series is large, and my observation in California leads me to consider all these forms as mere local varieties and not distinct species. Length .23—.38 inch; 6—9.5 mm.

Oregon, California and Arizona.

C. lecontei, Harold, Berl. Zeitsch. 1868, p. 68.

Remarkably like *probus* but differs in having the humeral stria carinate at base. The hinder tooth of the clypeus is obtuse, and the notch between it and the next one very slight. The head and thorax

are densely and finely granulate, almost rugose. Length .25 inch; 6. mm.

Texas.

C. viridis, Beauv. (*Copris*) Ins. Af. et. Amer. p. 23, pl. 3, fig. 2; *viridicatus*, Say, (*Onthophagus*), Bost. Journ. I, 175; *obsoletus*, Say, (*Ateuchus*), Journ. Acad. III, p. 208.

Easily known by its small size, bidentate clypeus, and slightly arcuate hind tibiæ. Surface shining, very finely punctured, and green or bronze in color, the latter being the *obsoletus*, Say. Length .16—.20 inch; 4—5 mm. The smallest species of the genus.

Southern and Western States, also in Central America.

C. vigilans, Lec. Journ. Acad. Ser. II, vol. IV., 1858, p. 16.

Our largest species. Easily distinguishable from the two following by the larger eyes. Surface granulate and opaque. Length .64—.84 inch; 17—22 mm.

Pennsylvania, Delaware, Missouri, Kansas and Texas.

C. lævis. Drury, (*Scarabæus*), Exot. Ins. I, p. 79, pl. 35, fig. 7; Oliv. Ent. I, 3, p. 160, pl. 10, fig. 89; *pilularius*, DeGeer Mem. Ins. IV., p. 311, pl. 18, fig. 14, *volvens*, Fab., (*Ateuchus*) Syst. El. I, 60; *volvens*, Cast. (*Canthon*) Hist. Nat. II, 68; *obtusidens*, Zeig. Proc. Acad. II, 45.

This species is entirely too well known to need comment. Several varieties, all having the thorax and elytra distinctly granulate may be noted.

Obtusidens. Zeig., in which the teeth of the clypeus are barely distinct. These are usually old specimens and have the teeth of the anterior tibiæ also obtuse.

Viridescens, Lec., (Coll.)—Surface bright green. The clypeus normally dentate.

The more general color is a dull black with a tinge of copper. Length .40—.75 inch; 10—19 mm.

Widely diffused over the entire region east of the Rocky Mts., westward into Arizona, and south through Northern Mexico.

C. chalcites, Hald. Proc. Acad. I, 304.

I cannot agree with Harold in uniting this with the preceding. The elytral sculpture is similar, but the granules are more sparsely placed. The thorax is finely and intricately rugose and not granulate as in *lævis*. I have seen specimens of the latter in which the thorax was quite smooth, yet very evident traces of the granules remain in smooth round spaces between which are the finer granules, visible even in strongly granulate specimens only under high power. The form of *chalcites* is more robust, being shorter and broader than *lævis*. Length .59—76 inch; 13—19 mm.

Missouri and Kansas.

AMECHANUS, nov. gen.

The above generic name is proposed for our species of *Athyreus*, of which there are three, differing from that genus by the scutellum being broad, triangular with the sides rounded, and not depressed below the level of the elytra. The very narrow linear and depressed scutellum is seen only in *Athyreus* and *Stenaspidius* in the group Geotrupini, while the form of scutellum of our species is very similar to that seen in the *Geotrupes* or *Bolboceras*.

When viewed from the front (or lower side when the legs are extended) the middle and hind tibiæ present two distinct forms of apex, viz:—

Outer apical angle deeply emarginate (fig. 1).....**ferrugineus.**
fossatus.
Outer apical angle truncate, (fig. 2).....**serratus.**

A. ferrugineus, Beauv. (*Scarabœus*) Ins. Af. et. Amer. p. 90, pl. 2, fig. 3; Klug (*Athyreus*), Abh. Berl. Ac. 1843; *furcicollis*, Cast. Hist. Nat. II, p. 104.

Brownish or ferruginous, not shining. Viewed from above the head (♂) is flat, anteriorly truncate or feebly emarginate, sides of front straight, genæ produced at a right angle, with the outer angle also right. The head of the female is furnished with an obtuse tubercle. The sides of the thorax are gradually rounded from base to apex and not serrate. Length .75 inch; 19 mm.

Southern States.

A. fossatus, Hald. (*Athyreus*) Proc. Acad. 1853, 362.

Similar to *ferrugineus* in color but more shining. The head of the male is strongly bisinuate in front; the sides of the thorax are gradually rounded from base to apex but sinuate and finely serrate near the anterior angle. The thorax is suddenly elevated in front, the anterior angles of the elevation acute and project outward, on each side a deep groove or fossa limited exteriorly by an obtuse tooth-like elevation. In *ferrugineus* the thoracic ornamentation is similar but the angles of the median prominence are turned upwards and the lateral fossæ less deep. Length .75 inch; 19 mm.

Texas. Only males are known.

A. serratus, Lec. (*Athyreus*) Proc. Acad. 1854, 80.

Differs from both the preceding species in the form of the middle and hind tibiæ as well as by having the thorax strongly serrate. The elytra are smoother, the striæ less distinct and scarcely punctured. In both sexes the head resembles the form seen in the female of *fer-*

rugineus. The vertex is flat in the male but with a transverse elevated ridge or short transversely flattened horn in the female. The thorax is less abruptly elevated in front than in the other species and the processes less strongly developed. When viewed anteriorly the thorax presents a faint median groove, on each side a deeper fossa bounded by an obtuse elevation. On each side of the thorax is an acutely elevated line proceeding upwards from a short distance behind each anterior angle, parallel with the base of the thorax. Of this lateral ridge no trace is found in either *ferrugineus* or *fossatus*. Length .46—.74 inch; 12—18.5 mm.

From Texas to Fort Yuma, California.

The following table will also serve to distinguish the species:—

Margin of thorax entire.....**ferrugineus.**
Margin of thorax serrate;
Sides of thorax sinuate near anterior angle.....**fossatus.**
Sides of thorax gradually rounded, not sinuate.....**serratus.**

BOLBOCERAS. Kirby.

Our species are two in number and are readily distinguished.

B. lazarus, Fab., (*Scarabæus*) Syst. 1, 11; Oliv. Ent. I, 3, p. 63, pl. 16, fig. 146. *melebœus*, Fab. Syst. I. 20; Westw. Trans. Linn. Soc. 1852, p. 28, pl. 4, fig. 26.

The body is uniform castaneous in color, smooth and shining. The elytra have never more than five punctured striæ between the suture and humeral prominence. The well developed males have a flattened horn arising from the clypeus, slightly recurved and truncate or emarginate at tip. There is also an elevated transverse line on the vertex. The club of the antennæ is elongate oval in both sexes, with the first joint smooth and shining. In the females the clypeal horn becomes a ridge, while the vertical ridge seen in the male is more prominent. Length .20—.50 inch; 5—13 mm.

This species is distributed over the entire region east of the Rocky Mountains.

B. farctus. Fab. (*Scarabæus*) Species 1, 14; Panzer, Faun. B. A. p. 3; Klug Monog. p. 51, (Abhand. Berl. Ac. 1843); *Cephus* Fab. Id. p. 19; Oliv. Ent. 1—3, p. 68, pl. 11, fig. 96; *tumefactus* Beauv. (*Scarab.*) Ins. p. 91, pl. 2, fig. 6.

This species is much more robust than the preceding. The color is yellow with the tibiæ occasionally darker. The head is black, also a narrow space along the base and sometimes a discal spot of the thorax. The elytra have the first interspaces black, also a subapical space becoming at times so large as to to involve more than half the elytra. The males have the anterior edge of the clypeus and the angles of the genæ acutely but slightly elevated. The horn is always short, acute at apex, and arising from the vertex. The females have merely a

transverse ridge on the vertex, slightly sinuate on top. The thorax of the female has in front an elevated ridge. The male has in addition a deep fossa below each end of the ridge, bounded exteriorly by an acute elevation. The ends of the ridge are also elevated into an acute tooth-like process. After a very careful study of many specimens I cannot but consider as one species, the two forms about to be described.

Two varieties may be distinguished in this species:—

a.—*tumefactus*, Beauv.—Elytra with seven striæ between the suture and humerus.

b.—*farctus*, Fab.—Elytra with five striæ only.

The less number in the latter form is caused by a partial or total obliteration of the 2nd and fifth striæ. The antennal club in both forms is broadly oval or round.

This species is as widely diffused as the preceding, and is similar in length, being, however, broader and more convex.

ODONTÆUS, Klug.

This genus may be readily known from the preceding by having the eye entirely divided by a narrow process of the anterior canthus.

Three species are known from the United States.

O. filicornis, Say (*Bolboc.*) Journ. Acad. 3, 211.

Pale castaneous or ferruginous in color, shining. The male has the horn movable as in the European species. Length .34 inch; 8.5 mm.

Middle and Central States.

O. cornigerus, Mels. (*Bolboc.*), Proc. Acad. II, 138.

Similar in color to the preceding, but occasionally black. The horn is less slender than in *filicornis* and fixed. This species attains a somewhat larger size than the preceding and is usually more robust.

Middle and Central States.

O. obesus, Lec. Proc. Acad. 1859, 282.

Of this species both sexes are now known. It is larger, more robust, with the elytral striæ less deep and closely punctured. The base of the thorax is much less sinuate than in either of the preceding species, and the hind thoracic angles are rectangular. The sides are gradually narrower from base to apex and rather feebly rounded. The male is rather smaller than the female and differs from the male of *cornigerus* by a less densely punctured thorax, with regularly but feebly rounded sides. The processes from the upper surface on each side are acute at apex. Frontal horn fixed. Length .44 inch; 11 mm.

Occurs at Table Mountain, south of San Francisco, Cal.

ONITIS, Fabr.

O. nicanor, Fabr. Ent. Syst. I. p. 54; Syst. Eleut. I. p. 29.

The habitat of this insect has long been supposed to be North America; recent investigations have shown it to be a West Indian insect identical with *Phanæus sulcatus* Drury. The unique specimen in the cabinet of Leconte, and which had been in the possession of Hentz and Harris, has been ascertained to be a South African species, *O. (fossor* Boheman, fide Sallé) *fodiens?* Boh. The determination of the identity is due to A. Sallé, from an examination of the specimen, (Ann. Ent. Soc. France, 1869, p. 501, note).

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BIOLOGICAL NOTES ON DIPTERA.—(Article 2nd.)

BY R. OSTEN SACKEN.

I.—A new American ASPHONDYLIA.

In a previous paper (Trans. Am. Ent. Soc. 1869, p. 299,) I have attempted to give a closer definition of the genus *Asphondylia*, and have described the first American species of the genus, *Asphondylia monacha*, n. sp., producing a gall on *Solidago*. In the same paper I mentioned a second, as yet undescribed species, *Asphondylia helianthi globulus*, Walsh in litt. Recently, a third species has been added to the list, producing a large flower-gall on *Rudbeckia*. It has been communicated to me by Mr. Jacob Stauffer, in Lancaster, Penna., together with drawings of the gall.

Concerning the gall, Mr. Stauffer writes as follows: "On the 21st of August I met with very large galls, formed on the flower of *Rudbeckia triloba?* They were in one case nearly round, of the size of a large apple; the other was an aggregation of galls of various sizes, forming a large excrescence."

In a few days the fly was obtained in numbers, as well as a parasitical hymenopteron, a *Callimome*, apparently identical with *C. advena*, O. S., which I had previously obtained from the gall of *Diastrophus nebulosus* on blackberry bushes.

Asphondylia rudbeckiæ conspicua, n. sp.—About 0.18 of an inch long. Grayish brown, thorax above opaque, grayish, with rows of blackish hairs; abdomen brown, with paler hairs; halteres brown; feet almost uniformly brownish, (paler when the hairs are rubbed off); wings rather dusky; the vein ending in the apex of the wing is gently arched towards its tip. Ovipositor dark brown; (described from dry specimens).

This *Asphondylia* shows the most important characters of its con-

geners, as defined in my previous artiele (l. e. p. 301). Its antennæ have the same strueture, but, being mutilated in the speeimens I have before me, do not allow a eloser eomparison. The ovipositor has the flattened eylindrical shape and horny eonsisteney peculiar to the genus and the long, needle shaped, stiff organ projeeting beyond it. What puzzles me about it, however, is, that whereas in two of the females whieh I have before me, the ovipositor (exclusive of the needle shaped organ) is very short, not longer than the abdominal segment preeeding it, in a third speeimen it has almost half the length of the abdomen. The pupæ are exaetly like those of the other *Asphondyliæ* which I have seen, and also have the frontal projeetions *contiguous*, and not remote. *A. rudbeckiæ conspicua* at first sight is not unlike *A. helianthi globulus*, Walsh in litt., of whieh I owe a specimen to the kindness of my lamented friend. Walsh's species, however, is easily distinguished by the paler color of its hind tibiæ and tarsi. Its general eoloring is also paler brown, with a yellowish-gray pubeseenee; its eoxæ are pale; the vein ending in the apex of the wing is less arched than in *A. rudbeckiæ conspicua*.

A. helianthi globulus, Walsh, forms a rounded swelling on the stem of *Helianthus*. As it has never been deseribed these notes may serve to identify it.

II.—On some undescribed Galls of CECIDOMYIA.

In addition to the deformations on plants, produeed by *Cecidomyiæ*, whieh were deseribed in my previous papers (*Monogr. of N. A. Dipt.*, Vol I., *Proc. Entom. Soc. Phil.*, 1866, p. 220, and *Trans. Am. Ent. Soc.*, 1869, p. 299), I give here a few new eases observed by me. Although I have not been able to rear the perfeet insects from these galls, I deem it useful to draw the attention of eolleetors to them. The deseription of the gall, coupled with a short notice of the peculiarities of the larva, will help to reeognize these eases easily.

Cecidomyia sambuci umbellicola, n. sp.

Among the umbels of the elder (*Sambucus racemosa*) in June, 1868, near South Orange, N. J., I observed some buds of the flowerlets which were considerably enlarged (from six to ten times the size of an ordinary bud), their shape remaining round. Inside of each of such buds I found an orange larva with a distinct breastbone and with two minute horny points, direeted upwards, at the anal end of the body. The latter character, not uneommon among *Cecidomyiæ*, has been mentioned by me in the *Monographs of N. A. Diptera*, ete., I., p. 181.

Cecidomyia caryæ nucicola, n. sp.

Green husk of the nuts of the shell-bark hickory (*Carya alba*), deformed by swellings, giving it an irregular appearance. When cut open the bumps showed small round cavities on the inside, often two or three together, each containing a pale reddish larva. Its breast-bone is distinct, elongated, narrow, its branches short and square, ending in sharp angles anteriorly, instead of being rounded; the emargination between them broad and deep. Anal end of the body smooth. In one case, the husk of a small nut, thus deformed, had burst open, leaving the nut uncovered, although it was yet far from being ripe; what remained of the husk formed several wart-like swellings on the basal portion of the nut.

Found August 9, 1869, near Rhinebeck, N. Y.

Cecidomyia tiliæ citrina, n. sp.

Swollen and deformed terminal buds on young shoots of the linden tree (*Tilia americana*). The gall thus formed is irregular in shape, with leaves growing out of it; its flesh moderately succulent. The cavities inside are filled with bright lemon-yellow larvæ of *Cecidomyia*. Breast-bone small, but distinct; the excision on its anterior edge is unusually deep.

On the leaves surrounding the larger galls, the same gall occurred in the shape of a small round swelling of the midrib; its identity with the larger gall was proved by the presence of the yellow larvæ inside of it.

Found in July, 1869, near Sharon Springs, N. Y.

Cecidomyia quercus majulis, n. sp.

Blister-like gall of *Cecidomyia* on young leaves of the pin-oak (*Quercus palustris*).

Generally, these galls occur on the principal ribs of the leaf; sometimes between the ribs. They are oblong, blister-like, hollow; surface somewhat uneven, wrinkled, walls thin; color pale green or reddish. They bulge out on one side of the leaf and have a longitudinal slit on the other. Galls projecting on the under side of the leaf and having the slit on the upper side seem to be somewhat more common than those of the opposite description. The slit can be opened without injuring the gall by gently pulling at the sides. Such galls which grow upon a rib show a trace of it on their longitudinal diameter. The larva, which can be taken out of the slit without lacerating the gall, is rather larger than the majority of the larvæ of *Cecidomyia*, (about 0.2 of an inch long,) and not reddish, as usual, but white, smooth; the

breast-bone is hardly visible, as its front part only is horny, having the appearance of a transverse, reddish-brown wavy line. The last abdominal segment has several minute, fleshy-pointed projections. The larva drops to the ground through the slit at a certain period of its development; hence, empty galls are often found.

Found in considerable numbers in the Central Park, N. Y., in May, 1869.

Contributions to the Natural History of the CYNIPIDÆ of the United State and their galls.—(Article 5th).

BY R. OSTEN SACKEN.

I.—New Observations on the Gall of CYNIPS QUERCUS PALUSTRIS, O. S.

Among the oak galls described in my previous articles, one of the most singular is the gall I named *Cynips quercus palustris*, from its frequent occurrence on *Q. palustris*, the pin-oak, although it is also occasionally found on other oaks of the red-oak group. This gall is especially remarkable on account of a small, cocoon-like body, containing the pupa, which rolls freely about in a comparatively large cavity, without being connected in any way with the walls of this cavity, or, in other words, with the substance of the plant upon which the gall is growing. An examination of the shell of this cocoon-like body (which, for brevity's sake, I will call *ovule*) proves that it does not consist of animal, but of vegetable matter, in other words, that the ovule is not a cocoon, although it contains the larva and afterwards the pupa. The growth of these galls is so sudden that, although I have seen thousands of them, I do not remember having seen one which was not full grown as far as the size is concerned. Once or twice only I discovered specimens arrested in their growth by some unknown agency and withered in that state; and in such specimens I observed the ovule still connected, by a short stem, with the leaf or branch upon which the gall was growing. It would seem, therefore, that the ovule is nothing but the usual kernel, existing in many other galls, but which here, during the growth of the gall, becomes disconnected from its shell.

During my rambles in the Central Park, in New York, in May, 1869, among numberless galls of this kind on the pin-oak, I observed a good many which were double, that is, consisted of two galls soldered together. Such galls instead of globular were oblong, sometimes slightly narrowed in the middle. Usually, there was no partition on

the inside between the two galls; in the cavity thus formed was the *likewise double* ovule. The coaretation in the middle of the ovule was generally much more marked, than that of the gall. The double ovule contained two well-formed pupæ without any partition between them, and hence almost in contact with each other.

Such double galls showed different degrees of coalescence, and the coalescence of their ovules was always in exact proportion to the coalescence of the outer shells of the galls. Sometimes the galls, although coalescent externally, were still separated by a partition internally; then each gall contained its own ovule. But whenever there was no inner wall between the galls, the ovules were also coalescent. In one case I observed the inner wall only partially removed, the cavities communicating by a rather small opening; the ovules were in this case coalescent by a small portion of their surface, otherwise retaining their rounded shape and thus almost representing the figure eight.

In one of the galls I observed a small green caterpillar with yellow stripes, which had taken its abode in it and eaten up a part of the ovule, and perhaps also sucked out the larva.

II.—CYNIPS Q. NOTHA, n. sp.

Still more remarkable, perhaps, than the preceding observation, is the discovery, among large numbers of the gall of *C. q. palustris*, of another gall, constructed on the same principle, that is, with a moveable ovule on the inside, but entirely different in the details of its organization.

This gall, growing on the same trees and in exactly the same situation with that of *C. q. palustris*, often alongside with it, is, however, much more rare. Its shell is not globular but oblong, much thinner and hence less succulent than that of *C. q. palustris*. Its green surface shows some longitudinal, semitransparent veins, of which there is no trace in the other gall. The ovule likewise is different; instead of round it is elongated, rounded at one end, pointed at the other, resembling a seed very much; its outer shell is much harder, smooth and shining. One of these galls had coalesced with a gall of *C. q. palustris*, just in the same manner as the above mentioned double galls of the latter kind. And, singular enough, the ovule of this double gall showed, by its unsymmetrical shape, that it was the compound of the ovules of the two different kinds. (I have preserved the specimen in my collection.)

I obtained several specimens, male and female, from these galls, which showed no perceptible difference from *C. q. palustris*. What

the different shape of the gall means, is a mystery to me. Until this is solved, I propose to call the gall *Quercus notha*, in order to distinguish it from the other. It may be that the flies themselves, upon closer examination, would show some specific differences. Both galls excluded their flies between the 20th and the 30th of May.

III.—CYNIPS QUERCUS ECHINUS, n. sp.—(From California).

Echinus-shaped, pinkish red gall of hardened gallic acid, on the leaves of *Quercus agrifolia*.

The gall, fastened to the underside of the leaf, consists of a globular body, covered with numerous pointed processes, which are not much shorter than the diameter of the body of the gall, the latter being from 0.2 to 0.3 of an inch. The inside of each gall contains a single insect in a small cavity. Mr. W. M. Gabb, to whom I am indebted for this gall, discovered it in Placer Co., California, in the low hills of the Sierra Nevada. According to his statement, the galls, when fresh, are of a bright scarlet, a little lighter at the tip of the processes. The substance of this gall is hard and brittle, consisting apparently of pure gallic acid. This gall belongs, therefore, to the same class with that of *Cynips quercus tubicola*, O. S. In both cases the leaves bearing the galls are not deformed at all, and the galls, when detached, leave hardly any trace behind them.

These galls reached me from California quite fresh, and in cutting some of them open I found the *Cynips* still alive. They seem to belong to the genus *Cynips* in Hartig's restricted sense.

Cynips quercus echinus, n. sp.— ♀ 0.14 of an inch long. Brown, mixed with reddish-brown; head, thorax, antennæ and feet with a grayish pubescence. Head reddish brown more or less darker in the middle of the front and vertex; antennæ brown, somewhat stout; 14-jointed, the third joint long and slender, the following gradually decrease in length up to the 8th; the 6 last joints short, subequal. Thorax reddish brown, with a dark brown stripe in the middle, and two similar lateral stripes which are abbreviated in front; scutellum ellipsoidal, brownish. Abdomen brown, shining, hind margin paler; basal part of the second, largest, segment densely pubescent on the sides; this segment is subtriangular, the following ones project very little beyond it; ventral valve with a tuft of yellow hairs. Feet reddish brown, mixed with darker spots. Wings subhyaline; stout veins clouded with brown, especially the transverse vein above the areolet, which has a distinct brown cloud upon it; tip of the radial vein expanded into a brown dot; a brownish, elongated cloud in the anterior half of the cubital area; two or three small, indistinct streaks of the same color in the posterior half of the same area; another pale cloud in the next following area, below the areolet: and still another on the anal vein, close by its usual interruption.

IV.—*On some species of* CALLIMOME, *parasitic on galls.*

The numerous parasites infesting the galls of *Cynipidæ* and *Cecidomyiæ*, afford a most interesting and yet entirely unexplored field of research. Besides the inquilinous *Cynipidæ*, like *Aulax*, *Ceroptres*, *Synergus*, a large number of other insects is obtained by those who collect galls for the purpose either of preserving them, or of rearing the gall-producing insect. Most of those belong to the family of *Chalcididæ*, and especially to the genera *Callimome*, *Ormyrus*, *Eurytoma* and *Decatoma*. Here and there species of *Pteromalus*, *Tetrastichus*, or a wingless *Eupelmus* are obtained. That the economy of galls is not confined to Hymenoptera alone, is proved by the fact that more than once I have obtained a Coleopteron, *Hydnocera verticalis*, from galls in my breeding-boxes, (compare *Proc. Ent. Soc. Phil.* 1861, pp. 68 and 71). The curculio *Otidocephalus americanus* also occasionally takes its abode in the corky substance of a gall, (compare l. c., p. 68).

Various are the relations in which all these species stand to the gall-producing insect, and it is in this direction that a great deal remains to be observed and studied. It seems that while the inquilinous or parasitical *Cynipidæ* (*Aulax*, *Synergus*, etc.,) live in the gall without attacking, although probably often injuring, the gall producing *Cynips*, the *Chalcididæ* are real parasites, the larvæ of which live at the expense of the larva of the gall-producer. But here, again, the questions how and when the eggs were deposited, what influence the parasites have on the growth of the gall, what difference exists between the mode of life of a *Callimome* and an *Ormyrus* or some other genus—all these questions remain unanswered.

My purpose in the present paper is merely to describe a few species of *Callimome*, obtained from galls by me or by others. I have confined myself to the most striking forms, omitting a good many species, which, from want of well defined plastic characters, I could not sufficiently characterize.

Species of *Callimome* are obtained from galls both of *Cynipidæ* and *Cecidomyiæ*, and hence, although the series of papers to which the present one belongs, treats of the natural history of the *Cynipidæ* only, I could not well omit the mention of those species of *Callimome* which infest the galls of *Cecidomyia*. In one case (*C. advena*), it seems pretty certain that the same species was bred from the galls of a *Cynips* and of a *Cecidomyia*.

If, on one side, the same species of *Callimome* infests galls of differ-

ent kinds, on the other, different species of *Callimome* are occasionally bred from galls of the same kind. Thus, both *C. brevicauda* and *C. advena* were obtained from the gall of *Diastrophus nebulosus*, O. S. *C. magnifica* and *C. flavicoxa* (perhaps also *C. solitaria*), were bred from the gall of *Rhodites radicum*.

Considerable materials for the present paper I owe to the communication of Mr. Norton, who had obtained a large number of *Callimome* from galls on the rose.

As, owing to the difficulty of this genus, doubts may arise concerning the identification of some of my species, I have deposited the types of my descriptions in the Museum of Comparative Zoology in Cambridge, Mass.

Analytical Table of the Species.

1. Pleuræ yellow, a single, shining green spot above the middle coxæ.....2.
   Pleuræ metallic green or blue.....3.
2. Surroundings of the mouth yellow; prothorax yellow, slightly greenish above in the male.....1. **ebria**, n. sp.
   Surroundings of the mouth green; prothorax green above in the male.....2. **dura**, n. sp.
3. All the femora dark green or blue.....4.
   Femora yellow, except sometimes the hind ones.....5.
4. Thorax with large, deep, pitlike punctures, leaving only very small intervals.....3. **advena**, n. sp.
   Thorax without such punctures, but with microscopical, transverse wrinkles which give it a sericeous appearance, and sparse, not deep, punctures.....4. **tubicola**, n. sp. (and a group of allied forms).
5. Hind coxæ yellow, green or blue at the base only; base of the abdomen yellow.....5. **flavicoxa**, n. sp.
   Hind coxæ green, yellow at the tip only.....6.
6. Prevailing color of the fore coxæ yellow, only with a small green spot near the base anteriorly; ovipositor remarkably short, not longer than the abdomen.....6. **brevicauda**, n. sp.
   Prevailing color of the fore coxæ green.....7.
7. Collare with a purplish spot anteriorly, immediately before the insertion of the head, tip of the abdomen also more or less coppery; ovipositor, in normal specimens, considerably longer than the body.....7. **magnifica**, n. sp.
   Collare altogether green, abdomen green or blue.....8.
8. Thorax bright green; ovipositor much shorter than the body.....8. **chrysochlora**, n. sp. (and a group of allied forms).
   Thorax pale green; ovipositor as long or a little longer than the body.....9. **solitaria**, n. sp.

Description of the Species.

1. **C. ebria**, n. sp.—Body yellowish, except the head, a part of the back, the scutellum, and a spot on the pleuræ, which are green; abdomen more or less tinged with brownish. Length ♂ 0.08—0.09; ♀ 0.11; ovipositor 0.08—0.09.

Head metallic green; mouth and its surroundings yellow, which color is more extended in the ♀ than in the ♂; scapus of the antennæ yellow, the rest black; front and vertex microscopically sculptured. Thorax yellow, except the scutellum, which is green, and a shining green spot on the pleuræ, above the middle coxæ; besides, in the ♂ the upper part of the mesothorax is green, which color also somewhat encroaches on the prothorax; in the ♀ this color of the back is less extended, more faint, and has a somewhat bluish tinge. Metathorax green in the ♂; yellow, with a bluish tinge, in the ♀. The scutellum is very minutely sculptured and has, also, some scattered and indistinct punctures which can only be perceived under a high magnifying power. Abdomen yellow, more or less tinged with brown on its upper side at the base, and on its latter half; the basal brown space has a metallic green reflection: the apical one is somewhat bronzed; both have more or less extent in different specimens, so that the yellow interval between them is more or less narrow; the underside, which is usually yellow, is also more or less encroached upon by the brown of the upper side: ovipositor brown, about equal in length to the body without the head; feet yellow, tarsi whitish; onychia brown; wings hyaline: costal vein slender.

One ♂ and two ♀ specimens, reared from the gall of *Lasioptera vitis*, O. S., on the wild grape, near Washington, D. C., (compare my paper on *Cecidomyia* in Loew's Monographs of N. Am. Diptera, p. 201.)

2. **C. dura**, n. sp.

From the gall of *Diplosis caryæ* (l. c. p 191), I have reared a single male specimen, larger than the ♂ of the preceding species, as it measures 0.1—0.11, but resembling it in the distribution of the colors, except that the head is altogether green, there being no yellow round the mouth, and that the prothorax is green above, and yellow only below. The costal vein of the wings is much stouter.

3. **C. advena**, n. sp.—Greenish blue, head and thorax punctured, femora greenish or bluish; tibiæ of the ♀ yellow, the hind ones infuscated in the middle; tibiæ of the ♂ all infuscated; tarsi yellow, whitish at the base; brown at the tip. ♂ about 0.09; ♀ 0.12—0.13; ovipositor 0.11—0.12 of an inch long.

Head more greenish on the face, more bluish on the front, with rather deep, moderately dense punctures; scapus of the antennæ reddish yellow; first joint of the flagellum greenish, the others black; mouth brown; thorax greenish-blue or bluish-green, covered, rather densely, with deep, pit-like punctures, extending also over the scutellum. The posterior portion of the scutellum is separated by a fine, transverse, impressed line, is more greenish and more smooth than the remainder, being only covered with dense, short, microscopic striæ. Metathorax with a quadrangular, smooth space in the middle, divided in two by a longitudinal impressed line; its sides with irregular irregularities. Pleuræ greenish or bluish. Fore coxæ greenish, with very delicate, microscopic transverse striæ; middle and hind coxæ usually blue; the latter finely and densely punctured. Femora blue or green; the anterior ones more inclining towards the green, the posterior ones towards the blue; their inner side is always brown; their tip yellowish. Tibiæ of the ♂ brown in the middle, yellow at the extreme base and at the tip; the front ones with a greenish lustre; tibiæ

of the ♀ brownish-yellow, except the hind ones, which are infuscated, the base and the tip only remaining yellow. Fore tarsi pale yellow; onychia brown; middle and hind tarsi with the first and even the second joint whitish; the following joints yellow, the tip brown. Abdomen dark green, shining in the male; brilliant green, in some places bluish, in ♀; ovipositor as long as the body without the head, or a little shorter. Wings hyaline.

Reared from the large blackberry gall of *Diastrophus nebulosus*, O. S. Eleven ♀ and one ♂ specimens. Washington, D. C.

Five specimens (two ♂ and three ♀), apparently of this same species, were communicated to me by Mr. Jacob Stauffer, Lancaster, Pa. He bred them from the gall of *Asphondylia rudbeckiæ conspicua*, O. S. The tibiæ of one of the males are a little paler; otherwise, I do not discover any differences.

5. **C. tubicola**, n. sp.—Green with bluish reflections; thorax sericeous with some very shallow, sparse, and indistinct impressions; feet black or greenish-black; tarsi whitish, tip black. ♂ about 0.07; ♀ 0.09; ovipositor about 0.1 of an inch long.

Head green, the sides of the face generally have a darker, bronze, coloring. The face is sparsely, but rather distinctly punctured and clothed with some scattered, short, whitish hairs; mouth yellowish-brown; vertex bluish-green, sericeous. Antennæ black, scapus of the ♀ yellowish. Thorax green, with a very slight tinge of bluish, rendered sericeous by dense, microscopic transverse striæ; it is even except some indistinct, shallow, scattered impressions, visible only in a certain light; a very sparse, short pubescence is also apparent. Pleuræ green, partly bright blue. Abdomen green, or bluish-green, bright, shining. Ovipositor of the ♀ about the length of the body. Hind coxæ with a distinct brownish, metallic tinge; their anterior part, however, generally green or blue. Femora metallic green, except the very tip, which is yellowish. Tibiæ: fore and middle ones brownish with a metallic reflection, except at both ends, which are yellow: this color is more extended on the fore tibiæ, especially in the ♀. Hind tibiæ dark brown, somewhat lighter brown at the tip. Tarsi whitish, black at tip. Wings hyaline.

Reared from the galls of *Cynips quercus tubicola*, three ♂ and a single ♀ specimen. Washington, D. C.

A good many species will be found closely allied to this, and, therefore, difficult to distinguish from it. I possess one male and two female specimens, apparently of the same species, perhaps a trifle larger, which have been obtained from galls of *Cynips quercus lanæ*.

A single specimen, obtained from *Cynips q. singularis*, Bassett, belongs, evidently, to a different species. It is larger, green, with very little bluish reflections, ovipositor considerably longer than the body, anterior tibiæ paler, etc. Another still larger specimen (source unknown), is of a more brilliant green; all the tibiæ are yellow; the ovipositor likewise very long.

5. **C. flavicoxa**, n. sp.—Coppery green, feet yellow, hind coxæ yellow, bright green at the basis; anterior half of the abdomen yellow; posterior purplish coppery; a slight shade of yellow in the middle of the forewings. ♀ about 0.13, ovipositor 0.10 of an inch long.

Face shining green with a golden reflection, very finely (almost microscopically), and sparsely punctured and pubescent; front more coppery and rather opaque. Antennæ black; scapus, except its tip, yellow; mouth yellow on the underside, mandibles somewhat brownish. Ground color of the thorax a rather dull metallic green, more or less tinged with coppery; this coppery tinge sometimes appears principally on the prothorax, sometimes it extends, also, over the whole mesothorax; there is, usually, (although not always) a darker spot on the anterior part of the prothorax, near the junction with the head, which spot, in some specimens, has a beautiful purple color. The narrow hind edge of the scutellum, separated by a furrow, and the metathorax are sometimes of a more intense green color. Pleuræ shining green. The surface of the thorax, including the scutellum, is finely, although not very densely, punctured. The metathorax is smooth, with the usual microscopic sculpture on its sides. Abdomen brownish-yellow; a metallic green spot near the extreme basis above; its posterior half coppery, with a purplish reflection. Feet, including coxæ, yellow; hind coxæ green at the basis, on the extent of which color they are finely and densely sculptured; basis of the tarsi whitish. Wings grayish hyaline; a pale yellow cloud or streak occupies the middle of the disc, hardly reaching beyond the stigmatical branch.

Six female specimens, reared by Mr. Norton from the gall of *Rhodites radicum*, O. S. The *C. magnifica*, as stated above, was reared from the same gall, and it is singular that both species should have two rather unfrequent characters in common, the spot on the neck of the prothorax and the cloud on the disc of the wings.

I possess specimens of a *Callimome* very like the preceding species, but distinguished by some constant characters. I found three ♀ and five ♂ specimens of this kind in a box, containing the common blackberry gall; but I am not positive about their having escaped from this gall, as I had kept some rose galls in the same box before.

The female specimens differ from those of *C. flavicoxa* by a slightly larger size, a distinctly longer ovipositor, which is almost as long as the body without the head, the more handsome green color of the thorax, the bluish base of the yellow hind femora and the much less extended purplish-coppery color on the hind part of the abdomen, which, in some specimens, is brownish-yellow with a slight tinge of coppery or greenish near the tip. The male specimens resemble the females, only the abdomen is altogether of dark color, with a transverse, yellow band upon its anterior part, which separates the greenish basis from the coppery or purplish posterior part. The basis of the hind femora in some of the specimens is green, instead of blue. A yellowish cloud on the forewings is not perceptible.

6. **C. brevicauda**, n. sp.—Green or bluish-green, abdomen with a reddish or coppery reflection: fore coxæ yellow, with a green spot near the base, feet reddish yellow. Ovipositor of the ♀ not longer than the abdomen; metathorax deeply rugose. ♂ about 0.12—0.13; ♀ 0.14; ovipositor about 0.06 of an inch long.

Head green, with some golden or bluish reflections; month yellowish-brown; face finely punctured and sparsely pubescent; front sericeous in consequence of very dense microscopic striæ; antennæ black, scapus yellow, first joint of the flagellum green. Thorax green or bluish, microscopically rugose and punctured with moderate density; hind border of the prothorax with a more golden reflection. Latter part of the scutellum separated by a transverse row of punctures, more green or golden-yellow than the remainder, microscopically rugose. Pleuræ more light green between the fore and middle coxæ; a brilliant, smooth, sometimes coppery spot above the middle coxæ. Metathorax deeply rugose, not shining. Fore coxæ yellow with a green spot near the basis, anteriorly. Middle coxæ green at the base, the remainder yellow. Hind coxæ green, densely punctured; their tip yellow. Feet yellow; tarsi slightly whitish at the base. Hind femora sometimes with a slight green reflection on the outside, which is often wanting. Seen from above, the metathorax and the inner side of the hind coxæ appear blue. Abdomen green at the base: the remainder more coppery. Ovipositor very short, not longer than the abdomen. Wings hyaline. The ♀ with a pale, yellowish tinge in the middle of the disc.

Numerous ♂ and ♀ specimens, reared from the common blackberry gall of *Diastrophus nebulosus*, O. S.

7. **C. magnifica**, n. sp.—Thorax green, or bluish-green; collare with a purplish red spot near the junction with the head; abdomen blue or greenish at the base, purplish and coppery towards the tip; ovipositor longer than the body.—♂ about 0.14; ♀—0.16—0.17; ovipositor 0.21—0.23 of an inch long.

Face with a golden reflection, rather smooth and shining and only with indistinct and scattered punctures; a distinct, longitudinal carina in the middle; pubescence whitish, short and very scarce. Mouth yellowish-brown. Front generally purplish-red in the middle. Antennæ black, scapus yellow, infuscated, and with a greenish reflection on the upper side, especially towards the tip. Thorax green, or bluish-green, with moderately dense, equally distributed punctures, visible under a moderate magnifying power; pubescence very delicate; on the prothorax, above, near the head, there is a purple spot, of variable size, but never reaching the hind margin of the prothorax; metathorax smooth, shining; pleuræ usually with a coppery spot on the prothorax, a golden-green, sometimes slightly coppery, finely striated space behind it, between the fore and the middle coxæ, and a perfectly smooth, shining space above the middle coxæ. Fore coxæ green at the base, yellow on their latter half, which color extends on their inside much further towards the base than on the outside. Middle coxæ green, their latter half yellow. Hind coxæ green: their tip yellow. They are, as usual, finely sculptured, but their sculpture is less deep and dense than in *C. brevis*, *tubicola*, *advena*, etc.; the coxæ, therefore, are not opaque, as in those species, but preserve their lustre. Feet yellow; tarsi whitish at the base; this color is most extended on the middle and hind tarsi; tip of all the tarsi brown. Knees also somewhat whitish.

Abdomen usually shining, blue at the base above; purplish towards the tip above; below more coppery red. Pubescence scattered; very distinct in the ♂. Ovipositor very long; wings with a very pale brownish yellow cloud, beginning a little beyond the base and extending a little beyond the stigmatical branch. It does not touch the anterior nor the posterior margin of the wing and is more distant from the latter than from the former.

Numerous specimens reared by Mr. Norton from the root-gall of the rose produced by *Rhodites radicum*, O. S.

A series of specimens was also communicated to me by Mr. Norton, distinguished from the former by the following characters:—

1. Front green, usually with a golden yellowish spot above the antennæ (but not purplish on the ocellar triangle). 2. Purplish spot on the prothorax small, often almost indistinct. 3. Abdomen greenish at the base (with hardly any trace of blue); more coppery than purplish towards the tip. 4. Hind coxæ reddish coppery, especially their hind part.

Mr. Norton's collection contained a considerable number (more than 50) specimens of *C. magnifica*, all labelled as having been reared from the gall of *Rhodites radicum*. There was, besides, about an equal number of specimens not labelled and therefore of unknown origin. All the latter specimens differed from the former in the above mentioned characters. If it was not for this perfect agreement of so many specimens obtained, apparently, from the same source, I would not hesitate to consider them as a mere variety of *C. magnifica*. Even now I am doubtful about their specific distinctness. Among Mr. Norton's specimens a single one, agreeing with the described variety, except that the basis of the abdomen is blue, was marked as having been reared from the gall of *Rhodites bicolor*.

If *C. magnifica* infests rose galls of different kinds, phytophacic varieties may occur.

8. **C. chrysochlora**, n. sp.—Bright green, abdomen near the base somewhat bluish, feet yellow; ovipositor longer than the abdomen but shorter than the body.—♂ about 0.10, ♀ 0.14—0.15; ovipositor about 0.12 of an inch long. Some females are much smaller and have the ovipositor proportionally shorter.

♀. Head of a lighter green than the thorax or slightly golden green, always more golden yellow or even reddish in the middle of the face. Mouth yellowish brown. Antennæ black, scapus yellow. Thorax green, often bluish, finely pubescent, microscopically rugose and punctured with moderate density. Metathorax smooth, shining, with an almost imperceptible rugosity on the sides. Abdomen green, bluish at the base, golden yellowish or somewhat coppery on the underside towards the tip. The coxæ green, yellow at the basis and, in some specimens, on the inside; hind coxæ green, moderately sculptured (not more so than in *C. magnifica*), and, therefore, not opaque. Feet yellow, knees, tips of the tibiæ and tarsi paler; tip of the latter brown. Ovipositor longer

than the abdomen; but sometimes shorter than the distance between the tip of the latter and the basis of the wings. Wings hyaline.

♂. Like the ♀, but less yellow at the tip of the fore coxæ; face more green than yellowish-green; hind femora with a metallic green reflection and a green stripe on the underside; the basis of the abdomen blue, its latter half coppery or purplish.

Several ♂ and ♀ specimens reared from the gall of *Rhodites dichlocerus*, Harris.

Mr. Norton's collection contained several males distinguished from the preceding by the hind femora being green in the middle. They may belong to the same species, as I do not perceive any other difference.

9. **C. solitaria**, n. sp.—Pale green, abdomen with a brassy tinge, hind borders of the segments somewhat bluish-green; feet yellow; ovipositor as long or longer than the body.—♀ about 0.12; ovipositor about 0.13 of an inch long.

♀. Head with golden reflections; thorax pale green. (If the green color of *C. chrysochlora* may be compared to that of *Cicindela biguttata*, Fab., the shade of green of the present species is more like that of *Chlænius solitarius*, Say). Abdomen green, with a yellowish, brassy, or somewhat coppery reflection, the hind margins of the segments being bluish green. The description of the sculpture of the preceding species can be applied to this. The scutellum is more flattened, less convex than *C. chrysochlora*. Fore femora green, yellow at the tip; hind femora green in the middle with a yellowish-brassy tinge, green along the borders. Feet yellow, knees and tarsi pale. Wings hyaline.

Three ♀ specimens reared from a rose gall (either *Rhodites radicum* or the rose gall described as No. 5, in the *Proc. Entom. Soc. Phil.* 1863, p. 42, as both galls were mixed in the same box).

On some new and little known MYRIAPODA from the Southern Alleghenies.

BY E. D. COPE.

PETASERPES, Cope.

Head concealed to the bases of the antennæ by the shield-like expansion of the scutum of the first annulus. Ocelli two, beneath the margin of the same, and at the approximated bases of the antennæ. Latter large, stout, hairy, six-jointed. Annulæ without lateral processes, each with two pores, forming two rows on each side of the body.

Petaserpes rosalbus, Cope.

The segments of the body are flattened below, and gently convex above. Their lateral expansion is a little greater than the length of the extended feet. Each has a delicate impressed line near the posterior margin, which passes round the extremity, producing the semblance of a longitudinal angle. The extremital margins are entirely continuous. The transverse diameter contracts very rapidly at both extremities, and the anal annulus and head, are relatively exceedingly small. The basilar segment is semidiscoid, and forms the segment of a hollow sphere. The anterior aspect is horizontal, and has a delicate marginal rim. The head is inferior, and has the short conic form of *Octoglena*, Wood. The mouth is situated near the extremity of a cone, and not of a rather flattened muzzle, as in the Androgmathidæ; there are hairs scattered about it and the sides of the head. The antennæ are of remarkable size for the head, and originate near together just at the inferior margin of the basilar segment. Just within and above them at their base is situated on each side a short crescentic ocellus or aggregate of ocelli, whose superior extremity is concealed by the margin of the basilar segment. In one specimen each of these presents a rugose surface, and in another seems to be divided into four ocelli, perhaps by the accumulation of a light colored deposit between the elevations. The antennæ possess six joints, of which the antepenultimate are a little the shortest. They become successively stouter towards the ex-extremity of the antennæ, and are all quite hairy.

The reproductive organ of the male is a subglobular body on a short pedicel, hairy except the convex extremity, which is smooth. On the inner side two short pedicels support, each, a short curved spine, one curved backwards and another forwards.

The annuli are smooth. The anal annulus is small, and for the

greater part overroofed by the penultimate, which is broader than usual. The legs are minutely hairy.

The color of this animal in life is a delicate rose color, whitish at one extremity and shading into orange at the other.

The number of the annuli in the adults I find to be fifty-three down to fifty-one. In specimens a little smaller there are forty-six and four, and in the smallest and palest colored, hence younger, the number ranges from forty-three to thirty-nine.

The locality whence I obtained this species is on the western slope of the Cumberland mountains, in the northern part of East Tennessee. I found them under masses of chestnut bark in two places, in small families of some size, with *Polydesmus*. They have the motions of Polydesmi, *i. e.* they progress slowly and roll themselves up when captured.

This form is near Wood's *Octoglena*, of which one species, (*O. bivirgata*) was found in northern Georgia. It differs generically in the great extent of the basilar segment, which is very short and leaves the head exposed in *Octoglena*, and in the agglomeration of the ocelli, which, in the latter, are arranged in two long series of four each.

The annuli appear to be completely chitinized on the median line below.

Observations on other Myriapoda.

The *Brachycybe lecontei*, Wood, occurs in Jefferson County, in the Valley of East Tennessee. It is not very common and lives under bark of fallen logs. The structure of its head is much like that of *Androgna thus* externally, and the genus is probably to be referred to the Androgna thidæ rather than to the Siphonophoridæ. It differs from the former genus in marked characters, the confluence of the last three articulations of the antennæ being the most important.

The *Cambala annulata* Say, (Cope, Proceed. Amer. Philos. Soc. 1869, p. 181,) is one of the most abundant of the Myriapoda in the mountain regions of Tennessee and North Carolina. It is more abundant than the *Spirostrephon lactarius*, which it considerably resembles, and with which it is found under bark, etc.

As is known, the Myriapoda of the orders Strongylia and Sugentia, are sluggish in their motions and not furnished with offensive weapons. They therefore produce secretions of a very acrid character, which furnish a secure defense against many enemies. The species of *Spirobolus* and *Julus* discharge a yellowish juice having much the smell of aqua regia, and a very acrid taste. The *Spirostrephon lactarius* exudes

from a series of lateral pores* a fluid which has in its odor a close resemblance to creasote The *Polydesmus virginiensis* is defended by a fluid which has almost exactly the smell of hydrocyanic acid, and is fatal to small animals. *Petaserpes rosalbus* secretes a considerable quantity of a milky substance, which has the perfume of gum camphor.

Pseudotremia cavernarum, Cope, is found in some of the limestone caves of the valley of Tennessee. I found it especially abundant in the Lost Creek Cave on the Holston River, in Granger County, near and on piles of bat excrement under stones. In company with it were numerous small, leaping, lepismoid insects, a Pselaphid beetle, a Carabid somewhat like *Patrobus*, and a spider. Large numbers of a very small Ixodes-like animal covered parts of the surface and cavities of the body of a dead bat in a locality distant from the mouth of the cave.

The writer examined the Lost Creek Cave for a distance, stated to have been measured, nearly two miles from the mouth, and the statement is probably correct, judging by the time occupied in passing through, to the point reached. A creek of considerable size issues from the cave; near the mouth it is dammed, and a race leads the water for a short distance to a corn mill on the banks of the Holston river. The water is crossed by the path perhaps five times before it fills up the passage so as to prevent further progress. The passage is wide, dry, and with so few irregularities that a public road might be readily made in it to that point. I could not find any fishes; just outside the mouth a small Uranidea is not uncommon. The dam within the cave abounds in dead Ios, Uniones, etc., said to be carried there by floods of the Holston, but quite as probably the refuse of the meals of Indians. Bones of Indians, turkeys, and game animals are to be found at the mouth of the cave, which is in a bluff some fifty feet above the level of the River. At one side of the entrance a hard limestone deposit contains charcoal, Uniones and Melaniæ. The limestone cliff produced abundance of *Asplenium montanum*, *Pellæa atropurpurea*, and a delicate bipinnate *Pteris*.

* I must correct my character "no lateral pores" for *Spirostrephon*, (Proc. Amer. Phil. Soc. 1869, p. 179,) to "one series of pores."

Descriptions of two new species of MUTILLA from Mexico.

BY CHARLES A. BLAKE.

Mutilla Cressoni, n. sp.—*Female.* Head sub-quadrate, somewhat narrower than the thorax, posterior angles rounded. Black, clothed with dense golden pubescence. Antennæ rufo-piceous, flagellum clothed with scattered glittering hairs. Eyes prominent, polished, rounded. Thorax sub-ovate, narrowed posteriorly, and abruptly truncate, mesothorax with lateral carinæ, disc black, coarsely granulate, with a few scattered black hairs, and margined with dark golden pubescence. Abdomen ovate, deeply punctured, basal segment black, the apical margin fringed with pale pubescence, second segment with two ovate fulvous spots at the basal margin, and a broad, anteriorly emarginate, band of the same color near the apical margin, clothed with deep golden pubescence; third and fourth segments black, with a longitudinal line of paler pubescence, forming the black ground into two lateral quadrate spots; fifth and sixth segments clothed entirely with pale golden pubescence, apex black. Ventral segments fringed with pale golden hairs. Legs black, middle and posterior tibiæ armed with a row of spines, and clothed with long pale hairs. Entire insect beneath clothed with long, pale, glittering hairs. Length 9 lines.

Hab.—Mexico. Two specimens (Coll. Am. Ent. Soc. from Prof. F. Sumichrast).

I take great pleasure in dedicating this beautiful species to my friend and co-laborer in entomology, Mr. E. T. Cresson.

Mutilla Nortoni, n. sp.—*Female.* Head rounded, wider than the prothorax, posterior angles more acute than in the preceding species, coarsely punctured, clothed with short golden pubescence, interspersed with longer hairs. Antennæ black, naked. Eyes round, prominent, polished. Thorax black, narrowed posteriorly, somewhat constricted, coarsely punctured, with a broad discal band clothed with appressed, bright golden pubescence, metathorax slightly truncate, sides clothed with a dense silvery pile. Abdomen ovate, coarsely punctured, basal segment clothed with pale golden pubescence; second segment with four orange spots, clothed with a scattered golden pubescence, the two at the basal margin, sub-triangular, those on the apical margin are larger and nearly joined together, third and fourth segments black, fifth and sixth with golden pubescence, apex black; ventral segments fringed with long pale hairs. Legs black, middle and posterior tibiæ and tarsi clothed with silvery hairs, those on the tarsi being longer and much more dense. Underside of thorax and abdomen clothed with obscure greyish hairs. Length 8 lines.

Hab.—Mexico. Two specimens (Coll. Am. Ent. Soc. from Prof. F. Sumichrast).

Closely resembles *M. Cressoni*, and is readily distinguished by the band on the thorax, and by the less robust form.

This fine species is respectfully dedicated to Mr. Edward Norton, of Farmington, Conn., from whom I have received valuable assistance in the study of this family.

Contributions to the COLEOPTEROLOGY of the United States.

BY GEO. H. HORN, M. D.

CALOSOMA, Fabr.

C Haydeni, n. sp.

The above name is proposed for a species in which the first three joints of the anterior tarsi of the male are spongy pubescent beneath, the base of thorax truncate. It is therefore allied to our *triste* and *obsoletum*, but differing from them in having the elytra connate and the body apterous. The head is large, as in *triste*, and the frontal impressions deep, rather finely punctured and wrinkled; vertex with but few punctures, occiput smooth. Thorax as in *triste*, but with the basal impression deeper and the lateral margins at base more strongly reflexed, nearly as much as in *semilucve*. Disc with distinct coriaceous sculpture and feeble median line, margins coarsely but distantly punctured, becoming more dense near the hind angles and basal region. Elytra elongate oval, humeri strongly rounded, and as distinctly margined as the sides. Surface very convex in both directions and with striæ of fine distinct punctures feebly impressed. Basal region with distant sub-muricate punctures. Margins distinctly muricately punctured, more dense at the humeral region, almost disappearing at the apex. Metathoracic parapleuræ and sides of abdomen with coarse punctures. Its color above and beneath is shining black. Length .84 inch; 22 mm.

Collected in Southern Colorado, by C. Thomas, of the U. S. Geolog. Survey, under Dr. F. V. Hayden.

This species must be referred to the same group with *C. politum*, Chaud., which I have had an opportunity of examining, through the kindness of M. A. Sallé, of Paris, from which it differs (besides the sculpture,) in its greater general convexity, broader and more strongly reflexed thoracic and elytral margins. In *politum* the basal thoracic impressions are scarcely at all evident. In accordance with the arrangement of our species published by Dr. Leconte, Proc. Acad. 1862, p. 52, this species should be placed as a subdivision of group IV. Both sexes are known to me, the female having slightly broader elytra.

C. tepidum, Lec.

Specimens collected by me at Sacramento, Cala., differ from the Oregon type in being entirely black. The thoracic and elytral sculpture is rougher, and in many specimens the large punctures usually golden or bronzed, seen in the Oregon specimens, are here totally obliterated.

This species has been redescribed as *C. irregulare*, by Mr. Walker. Naturalist in British Columbia, Lord, Vol. II., p. 312.

Callisthenes pimeliiodes, Walker, loc. cit.=*Calosoma luxatum*, Say, var. *Zimmermanni*, Lec.

Very many specimens of the varieties of *luxatum* forming a fine series, are known to me. The form named by Walker is probably that in which the tuberculiform elevations of the elytra are more prominent; the variety has been known to us for many years.

C. latipenne, n. sp.

Allied to *luxatum* Say, but differs from all the races of that species in having a proportionately smaller head, broader thorax with more rounded sides and more broadly reflexed margin, apex less deeply emarginate, basal angles more broadly rounded; elytra more broadly oval, marginal groove deeper from the more strongly reflexed margin.

Color black and shining, head sculptured as in the smooth forms of *luxatum*; thorax moderately convex, disc smooth with the median line distinct, with the sides coarsely punctured and wrinkled. Elytra broadly oval, smooth and shining, disc with approximate striæ of very fine punctures, margin broad as compared with *luxatum* and equal in its entire length except at base where it is narrower, rather densely muricately punctured and in well preserved specimens of a greenish bronze color. Under surface and legs black and shining, almost entirely smooth and impunctured. Length .54—.68 inch; 14—17 mm.

In most of the specimens before me the margins of the elytra immediately behind the humeri have three or four very distinct serrations. This character is quite common in the species of the *triste* group, but not seen in any of our species of the group *Callisthenes*.

On comparison the male of this species is found to be as broad as the female of *discors* Lec., the elytral margin broader and the surface sculpture of a different order.

Collected by Mr. Wm. M. Gabb and myself, in the elevated regions of the South Sierras of California.

Calosoma peregrinator, Guérin. Rev. Zool, 1844. p. 255.

This is probably identical with and has priority over *prominens* Lec. (*angulatum* || Lec.).

Carabus gladiator, Motsch.=*C. bellatus* Fabr., var. *baccivorus* Fisch.

C. hudsonicus, Motsch.=*? C. maeander*, Lap.

C. tatumi, Motsch.=*C. serratus*, Lap.

The three species above noted are described by Motschulsky in Bull. Imp. Soc. Nat. Moscou, 1865, pp. 285 and 293.

Diachila subpolaris, Lec. New. Spec. p. 2, 1863.=*D. americana* Motsch. Bull. Mosc. 1864, iii, p. 195.

Trachypachys Gibbsi, Lec. Proc. Acad. 1861, p. 339.—*T. californicus*, Mannerheim, cit. p. 194.

OMOPHRON, Latr.

Several new species of *Omophron* being in my cabinet, I have thought it advisable to define our species by means of short descriptions, so that the student may be enabled to determine them; for although our species are comparatively few in number, their descriptions are so widely scattered as to be inaccessible to many.

Our species divide themselves into two groups:

Group I.—Species broadly oval, shining, elytral striæ almost entirely effaced at apex and indistinct at the sides median thoracic line scarcely evident. Two species are known *labiatum* and *nitidum*.

Group II.—Species less broadly oval, less convex and shining elytral striæ attaining (very nearly) the apex, lateral striæ as distinct as the discal.

Elytra, 14—striate.
- Striæ deep, finely and closely punctured.....**gilae**
- Striæ moderate, punctures rather distant and obliterated at apex.....**obliteratum**, n. sp.
- Striæ faint, punctures large, distant .....**robustum**, n. sp.

Elytra 15-striate.
- Broadly oval.
  - Punctures of elytral striæ obliterated at apex.....**dentatum**.
  - Punctures distinct at apex.
    - Lateral margins only, of thorax, pale.....**americanum**.
    - Lateral, basal and apical margins pale.....**tesselatum**.
- Elongate oval.
  - Elytral striæ not deeply impressed, finely and closely punctured.....**ovale**, n. sp.

O. labiatum, Fabr. (Scolytus) Syst. El. I. p. 248; Say (Omophron) Trans. Am. Phil. Soc. vol. II, p. 79, 1828; Dej. Sp. 2. 261, 1823.—Broadly oval, convex, shining; color dark brown or nearly black, lateral margin of thorax and elytra pale, the latter broader at apex. Elytral striæ moderately deep at their basal third with rather large but distant punctures; as the striæ approach the middle the punctures become effaced and near the apex the striæ themselves are totally obliterated, scarcely any trace remaining; toward the sides the striæ become also effaced. The pale limb of the elytra in most specimens gradually shades into the darker color of the disc, but little tendency being shown to the formation of branches or processes as in all our other species. The under surface is dark piceous with the sides and apex of abdomen paler. The prothorax is nearly black with the lateral margins pale silvery-white, with coarse sparsely placed punctures more closely approximated at the apical and basal regions. Head black with a metallic lustre near the eyes, anterior margin of front and clypeus brownish, labrum silvery-white. Length .24 inch; 6 mm.

Middle & Southern States.

O. nitidum, Lec. Am. Lyc. IV, p. 347; *nitens* Chaud. Rev. Mag. Zool. 1868, p. 7; not *nitidum* Chaud. coll.

Our most broadly oval, convex and shining species. Differs from *labiatum* in having the striæ of the elytra less impressed, the punctures larger, more distant and extending fully two thirds the distance from the base to the apex. The punctures forming the lateral striæ are also well defined. The color of the entire upper surface is metallic green, the elytral pale border narrow, broader at the humeri; from this border slightly behind the humeri a small process enters, at right angles to the border, to the eighth stria and becomes gradually narrower to the apex; behind the middle another process extending obliquely forward to the sixth stria gradually narrowing and with sinuous margins; near the apex a subquadrate process parallel with the suture but separated from it by the first interval, and with its tips emarginate. Thorax similar to *labiatum*, pale margin impunctured, basal and apical regions coarsely but not densely punctured. Head metallic green, coarsely and very sparsely punctured, with the frontal spot and clypeus pale; labrum silvery-white. Under surface somewhat paler than *labiatum*. Length, .20—.24 inch; 5—6 mm.

Occurs in Illinois, Kansas, Indian Territory and Texas.

The synonyms have been suggested to me by Dr. Leconte in a late letter from Paris, where he had an opportunity of inspecting that portion of the cabinet of Chaudoir containing *Omophron*. He also states that *O. nitidum*‡ Chaud. (cabinet) is still undescribed and is from Louisiana.

O. gilæ, Lec. Ann. Lyc. V. p, 201.

The characters given in the preceding table render any detailed description unnecessary. The prevailing color of the upper surface is pale yellowish. Head coarsely and sparsely punctured between the eyes; vertex somewhat darker. Thorax very coarsely but sparsely punctured over its entire surface, with the median line distinctly impressed, and with a transverse greenish metallic spot equalling in length about half the width, and in its width about half the length of the thorax. The elytra have on each side of the scutellar region a short greenish space extending along the basal margins sending three short processes backward, the first on the interspaces 7—8, second on interspace 10, third on interspace 12. The space between the suture and first stria is dark and near the apex expands into a small rhomboidal spot. From the suture outward on each side, at the anterior third a triangular dark spot, apex at suture, base at stria 6; between the latter spot and the margin a small subquadrate spot between striæ 8—12; at the posterior

third are two spots similar to the last, the first between striæ 3—6 the second between striæ 9—13, these are united by a narrow band arching forwards. The under surface is pale brownish with the sides and apex of abdomen paler. Length .28 inch; 7 mm.

From the margins of the Gila River, Arizona.

O. robustum, n. sp.

Similar in form to the preceding species but rather more convex, robust and shining. The length of the elytra as compared with the breadth is shorter than any other of our species. The thorax is comparatively shorter than in *gilæ*, the punctures coarse but with the marginal and the dark discal space almost free from punctures. Head with but few punctures, front pale yellowish, vertical and post ocular regions and a narrow line above the eyes brownish; clypeus pale; labrum silvery-white. The thorax has a narrow transverse band of metallic green color slightly extending forwards and backwards on the median impressed line and an oval brownish spot on each side between the metallic band and the margin. The elytral sculpture consists of striæ of rather coarse punctures distantly placed, the striæ themselves very feebly impressed. The ornamentation is similar to that seen in *gilæ*, but the narrow black basal line is absent as also the dark sutural line between the scutellar region and the position of the second row, and also that posterior to the third row of spots. The color of the under surface is similar to *gilæ*. The specimen is perfectly mature. Length .26 inch; 6.5 mm.

A single specimen in the Cabinet of Dr. Leconte from the Nova Scotia region.

This species at first glance might be mistaken for *tesselatum* but the latter has fifteen rather deeply impressed, closely and rather finely punctured striæ.

O. obliteratum, n. sp.

This species also has but fourteen elytral striæ, but with a close resemblance to *americanum*. The thorax is longer and rather more narrow in front. Head similar in color and sculpture. Thorax with the entire surface, even to the margins coarsely and sparsely punctured, less densely on the disc, median line feebly impressed; pale margins narrow and extending inwards by a rather broad band, a short distance along the apical margin. The elytral coloration is almost identical with *americanum*, but the punctures of the striæ which extend very distinctly to near the apex in the latter species are almost entirely obliterated in this and the striæ are also much fainter. Under surface

piceous; abdomen, especially at the sides and tip, paler. In this species, as in *americanum*, the dark spaces of the elytra are but faintly tinged with metallic green. Length .27 inch; 7 mm.

A single specimen collected at Camp Grant on the San Pedro River, a tributary of the Gila, Arizona.

O. dentatum, Lec. Ann. Lyc. V, p. 200.

Resembles *gilæ* in form and markings. The thorax is however longer and with the pale margin and a discal transverse space scarcely punctured, and the median line more feebly impressed. The metallic discal transverse band is longer and approaches more nearly the margin. From the other species of the group it differs by having the punctures of the striæ at the apical third of the elytra almost entirely obliterated. Length .28 inch; 7 mm.

Occurs on the banks of the Gila in Arizona, Fort Yuma, Temecula, Posey Flat, Owen's Valley, and other regions bordering the Colorado Desert of California.

O. americanum, Dej. Sp. 5, p. 583; *Sayi* Kirby, Fauna Bor. Am. IV, p. 55.

This species is so widely distributed as to need no description. The elytral interspaces are here more convex than in any other of our species, the punctures of the striæ rather fine and approximated and distinctly visible almost to the apex. The median thoracic line is faint. The disc of the thorax is dark brownish, slightly tinged with metallic green. The lateral margins pale, narrow, suddenly dilated at apical end, and with a narrow extension along the base, for a short distance. Length .24—28 inch; 6—7 mm.

Occurs in Canada, New England, Middle and Western States.

O. tesselatum, Say. Journ. Acad. III, p. 52; *Lecontei* Dej. Spec. V, p, 582.

Resembles *gilæ* and *dentatum* by the elytral ornamentation. The striæ are very distinct at apex and the punctures closely placed in the discal region are more distant near the apex, but still quite strongly impressed. The dark rhomboidal spot formed by the dilatation of the dark sutural line, seen in the two species above mentioned, is here absent. The thorax coarsely but sparsely punctured, the discal space and the lateral marginal region with but few punctures. The median line is moderately impressed. The discal metallic spot is short equalling about one-third the width of the thorax and with narrow processes extending to the basal and apical margins along the median line. Under surface ferruginous, margins and apex of abdomen paler. Length .26 inch; 6.5 mm.

Canada and Middle States.

O. ovale, n. sp.—Elongate oval, sides of thorax subparallel behind the middle. Elytra oval, finely 15 striate, punctures small rather close, interspaces flat. Head above the eyes sparsely punctured, vertex shining metallic green, margin of front along the suture, clypeus and labrum pale. Thorax coarsely punctured over its entire surface, more densely near the base and apex, median line moderately impressed; with a transverse nearly black faintly bronzed band extending nearly to the lateral margin and broadly along the median line to base and apex; the pale spaces therefore consist of a subquadrate spot at each angle united by a narrow line along the lateral margin. Elytral disc brownish black with feeble lustre and scarcely at all bronzed; margin pale with three processes on each side extending inwards, the first behind the humerus broadly triangular extending to the 11th stria, the second behind the middle, narrower and with irregular borders extending slightly obliquely forward to the 10th stria, the sub-apical process is sub-quadrate, parallel with the suture and emarginate at its inner and front sides; in addition a small, badly defined oblique spot on each side near the scutellar region, a rhomboidal spot near the apex of the first lateral process and an irregular feebly sinuous band near apex of the second process and extending toward the suture. Scarcely any metallic lustre is seen except at the basal region and along the anterior third of the suture. Under surface ferruginous brown, apex of abdomen paler. Length .26 inch; 6.5 mm.

Easily known from any other of our species by its more elongate form, finely striate elytra with flat interspaces. In one specimen before me the thorax is subparallel behind the middle, the other has the sides distinctly divergent to the base.

Two specimens, ♀ ♂, Fort Crook, California.

In glancing over our species, two forms of elytral marking are seen. In one group the dark or metallic spaces resolve themselves into three transverse rows of spots, basal, submedian, and sub-apical. The margins are pale and the darker spots occupy much less space than the pale portions. In the second group the margin alone is pale with three branches extending inwards, invading for a very short distance the darker color of the disc; an occasional pale spot may be found in the dark discal space. In accordance with the extent of the dark discal space, our species may be arranged as follows;

1. *labiatum*; 4. *obliteratum*; 5. *americanum*;
2. *nitidum*; 3. *vitale*;

while those in which the pale colors prevail;

1. *robustum*; 3. *dentatum*;
2. *gibbum*; 4. *tessellatum*;

the first being the paler, while the groups approach each other through *americanum* and *tessellatum*. The species all vary somewhat in the extent of their markings and the preceding remarks apply only to a general view of several specimens of each.

PSEUDOMORPHA, Kirby.

P. Behrensi, n. sp.—Oblong parallel, moderately depressed, piceous black, shining. Head smooth, with but few distant punctures each bearing an erect yellow hair. Thorax moderately convex, nearly twice as broad as long, apex feebly emarginate, angles obtuse, sides strongly rounded, slightly converging to apex, hind angles broadly rounded, base truncate; sparsely muricately punctured, each puncture with an erect hair, margin slightly reflexed and sparsely fimbriate. Elytra parallel, nearly twice longer than broad, feebly convex, sparsely muricately punctured, each puncture with a yellowish erect hair, margin sparsely fimbriate with yellow hairs. Body beneath ferruginous brown, abdomen punctured and pilose. Legs ferruginous, femora very robust. Length .38 inch; 9.5 mm.

This species differs from *Cronkhitei*, Horn, in having the form more parallel and more convex. The thorax is much more convex and not as broad and the sides are more broadly rounded and converge less to the apex; the lateral margin is more broadly reflexed and the impression within, consequently deeper and extending faintly within the hind angles. In this species the disc of thorax has a median faintly elevated ridge which is scarcely at all evident in *Cronkhitei*. The elytra of *Behrensi* are parallel on the sides while, in *Cronkhitei* they converge toward the apex, in the latter species the elytra are nearly smooth with scarcely any traces of punctures, in the latter species the muricate punctures are quite strong and though confusedly arranged at base are in striæ beyond the middle. The femora of *Behrensi* are much more robust than those of the other species.

For this interesting addition to the fauna of California, science is indebted to Mr. James Behrens of San Francisco, by whom a single specimen was collected and kindly placed at my disposal. I am not informed of the precise locality from which it was obtained. It must however belong to the fauna west of the Sierras.

BYRRHUS, Linn.

B. Pettiti, n. sp.—Oblong oval, similar in form to *geminatus* Lec. Sides of thorax nearly straight surface clothed with silvery hairs, with the sides, median line, anterior apical angles and basal spot on each side black. Elytra densely clothed with brownish black hair, with short velvety lines irregularly disposed, and a crescentic band convex backwards clothed with silvery hairs. Body beneath rather coarsely punctured and sparsely cinereo-pubescent. Scutellum black. Length .34 inch; 8.5 mm.

The form of the species is similar to *geminatus* Lec., but rather less convex. The larger portion of the thorax is clothed with silvery pubescence with a slight yellowish tinge, with black spaces arranged in the following manner; a median black line sometimes divided so as to form an apical triangular and basal linear spot; at apex a small triangular black spot joining the black margin which is not seen when

viewed directly from above; a basal triangular black spot on each side equally distant from scutellum and angles, larger than the apical spot but not joining the margin. The scutellum is velvety black The elytra are clothed with brownish black hair with short lines of velvety black rather irregularly placed. At the middle of the elytra and common to both is a moderately wide crescentic band (of which the ends are obtuse) with the concavity forwards; extending three fourths of the width of each elytron, and clothed with silvery white hairs. Body beneath densely punctured and sparsely clothed with short cinereous hairs.

This species appears to be rare in Canada West. For two fine specimens in my cabinet I am indebted to Mr. Johnson Pettit, of Grimsby, Ontario, to whom I take pleasure in dedicating it, as an evidence of appreciation of the services he has rendered science in the investigation of the fauna of his neighborhood.

Lichnanthe Edwardsi, n. sp.—Body black, head and thorax greenish metallic, elytra pale brownish testaceous. Head densely and coarsely punctured, Thorax as broad as long, sides rounded in front, sub-parallel behind, base rounded, disc densely and coarsely punctured except at the hind angles, and rather densely clothed with long black-brown hairs. Elytra longer than their conjoined breadth, brownish testaceous, rather coarsely and densely punctured, and sparsely clothed with short black recumbent hairs. Body beneath black, faintly metallic and sparsely clothed with hairs. Abdomen more shining very finely punctured and with fewer hairs; the last two segments are brownish ferruginous. Legs black, femora and tibiæ hairy. Length .62 inch; 15.5 mm.

The elytra are contiguous along the anterior three-fifths of the suture then strongly divergent. It may be known from all our species by the hair of the thorax being long and black, the hair of the under surface is somewhat paler and very much less dense. The last joint of the maxillary palpi is very distinctly excavated as in *Dasyden*, and by the increase of the number of species the differences between it and *Lichnanthe* appear to be vanishing.

For the unique in my cabinet, I acknowledge great indebtedness to Mr Henry Edwards, of San Francisco, to whom I take pleasure in dedicating it. Occurs in "Oregon" without more specific designation of locality.

Serica elongatula, n. sp.—Castaneous, or testaceous, brown, elongate oval, sides parallel; sub-opaque, faintly sericeous. Head rather densely punctured in front, sparsely on the vertex, clypeus faintly emarginate, angles broadly rounded, margin reflexed. Thorax convex, neither coarsely nor sparsely punctured, rather more than twice broader than long, sides strongly rounded and bristled with long hairs. Elytra elongate sub-parallel, fimbriated on the outer rim, very convex transversely, faintly striate and with punctures irregularly

placed. Beneath very sparsely punctured, clothed with long yellow hairs sparsely placed, longer and more numerous on the pectus than abdomen. Length .30—.32 inch; 7.5—8 mm.

Differs from all our species by its more elongate form, parallel sides, more transversely convex thorax and elytra. The surface is very faintly sericeous.

Occurs rather abundantly in Owen's Valley California.

Serica crassata, Walker, Naturalist in Brit. Col. II, 1866, p. 323.

This appears to be *anthracina* Lec.

Serica *robusta*, Lec.=**valida** Harold, Cat. p. 1121; Col. Heft. V, 1869.

Dynastes Tityus, (Linn).

A specimen in my cabinet from Fort Grant, Arizona, has the thoracic horn very nearly twice as long as in our eastern specimens, the tip is broader and deeply emarginate, and the two small horns usually seen below the base of the larger are here reduced to small tubercles and are placed on the base of the horn itself. The frontal horn is also proportionately longer, distinctly grooved on its upper edge and with a tooth about one fourth from the tip limiting the groove in front. From the base of thorax to tip of thoracic horn the length is 1.30 inch, in our eastern form a similar measurement gives .86 inch. The specimens have otherwise similar size and appearance. For this variety the name of *Dynastes Grantii* is proposed.

Valgus californicus, n. sp.—Piceous-black, head coarsely punctured, vertex moderately concave. Thorax longer than broad, coarsely but sparsely punctured, with a broad shallow impression on the median line near the apex and a moderately deep impression near the middle of the lateral margin. Disc of elytra flat with moderately deep striæ with convex intervals, irregularly disposed. Pygidium oblique, moderately convex and styliferous at apex. Under surface rather shining and coarsely punctured. Length .35 inch; 9 mm.

This specimen is in rather imperfect condition, being almost entirely deprived of vestiture the few scaly hairs that remain being black. It differs from either of our species in the absence of any denticulation of the sides of the thorax in front; the median sulcus is very faint and the lateral impressions deep so that the sides appear to be slightly emarginate when viewed from above. The entire surface although deprived of vestiture is feebly shining; the last two dorsal segments of the abdomen have more lustre and are rather densely punctured. The teeth of the anterior tibiæ are short, the apical and third alone being at all acute. The style (tariere) is short, flattened and rounded at tip.

A single specimen was found at Fort Crook, Cal., during July, caught in a spider's web.

ACMÆODERA, Esch.

A. quadrivittata, n. sp.

Similar in form to *A. tubulus* and agrees with that species in the absence of any transverse carina and marginal groove to the last abdominal segment, differing in the following particular:—

Thorax slightly more elongate, median sulcus more distinct. Elytra striate, striæ coarsely punctured, intervals flat or feebly convex, and with a single row of fine punctures, each bearing a very short yellowish hair; color piceous, with two yellow stripes on each elytron, the inner occupying the third, fourth and fifth intervals, the outer the ninth and tenth, the two stripes united at apex. Body beneath black, with a slight greenish tinge, sparsely punctured, each puncture bearing a short pale hair. Length .22 inch; 5.5 mm.

One specimen collected in Utah by Dr. Palmer, placed at my disposal by Mr. Townend Glover.

CORYMBITES, Latr.

C. longicornis, n. sp.—Form slender, elongate. Head piceous, coarsely punctured; antennæ ♂ equalling four-fifths the length of body. Thorax moderately convex, piceous, shining, coarsely not very densely punctured, more densely at the hind angles; form elongate, nearly twice as broad as long, sides straight, slightly converging in front, hind angles slightly divergent, subacute and tipped with yellow. Elytra elongate, slightly narrower behind, moderately convex and shining, brownish, with broad discal yellow stripe; surface moderately striate, striæ punctured, intervals moderately convex, punctured and more rugose at scutellar region. Body beneath piceous, abdomen and legs paler. Entire surface very sparsely clothed with greyish hairs, rather dense beneath. Length .54 inch; 13.5 mm.

Allied to *C. bivittatus*, Mels., differing in the much less densely punctured and more shining thorax, and the less acute and less divergent hind angles. The antennæ are also much longer.

For the unique in my cabinet I am indebted to Mr. Townend Glover, of Washington. Collected by Dr. Parry in the mountains of North Carolina.

COLLOPS, Erichs.

Our species of *Collops* have become quite numerous and it has been thought useful to present to the American students the results of a short study of our species, and without desiring to prolong the present paper unnecessarily, neither bibliography or description of each species will be given except when found necessary to carry out the object of the present sketch which is to present a table by which our species may be readily determined without recourse to the various publications in which they are now scattered.

In examining the antennæ of our largest species (*validus*) there will be found a curious articulated appendage arising from near the

base of the second (really the third) joint of the antennæ, and extending forward, usually concealed in the deep cavity on the upper surface of the joint. This appendage resembles an elongate inner maxillary lobe, is slender and furnished at tip with a brush of stiff curved hairs. When this appendage is raised so as to become distinctly visible the entire joint resembles somewhat the large mandible of a crustacean. All the species exhibit this appendage varying in size and development according to the species. I find no mention of this in any authors who have written on this subject. Its use is probably for grasping the antennæ of the female in copulation. In capturing these insects during the act, I have found the male holding the female rather tightly by the antennæ, but without any examination inferred that this was done rather by the bending of the outer joints backward upon the second.

Our species may be arranged in the following manner:

Elytra unicolorous.
  Thorax yellow or reddish-yellow, immaculate.
    Elytra very densely punctured; abdomen rufous..**tricolor** (Say).
    Elytra less densely but more coarsely punctured; abdomen black.....**punctatus**, Lec.
  Thorax with discal black spot of greater or less extent; sometimes entirely black.
    Elytra finely and densely punctured, surface more densely pubescent.
      Abdomen and anterior legs rufous..... {**eximius**, Er. / **marginicollis**, Lec.
      Abdomen and legs black.....**nigriceps**, (Say)
    Elytra more sparsely and coarsely punctured, surface sparsely hairy; thorax almost entirely black, shining.....**cribrosus**, Lec.
  Thorax rufous with two elongate, oblique black spots.....**bipunctatus** (Say).
Elytra with entire limb and suture rufous.
  Elytra with apical and basal spot blue or bluish black.
    Thorax rufous with two oblique black spots.....**validus**, Horn.
    Thorax rufous, immaculate.
      Abdomen and legs black.
        Thorax smooth scarcely punctured.....**quadrimaculatus**, Fab.
        Thorax densely and finely punctured opaque.**histrio**, Er.
      Abdomen and legs red.....**pulchellus**, Horn.
    Thorax with discal black spot.
      Elytra densely and coarsely punctured; larger species.....**balteatus**, Lec.
      Elytra finely and sparsely punctured; small species.....**insulatus**, Lec.

Elytra with broad bluish vitta sometimes narrowed at middle.
Thorax rufous, immaculate.
Rufous margin of elytra narrow, blue vitta scarcely narrowed at middle.....limbellus, Gemm.
Rufous margin broad, vitta, narrow at middle.
Sides of thorax strongly rounded.....laticollis, Horn.
Sides of thorax feebly rounded.....confluens, Lec.
Thorax with discal black spot.
Elytra alutaceous, unequally punctured.....punctulatus, Lec.
Elytra scabrous, densely punctured..... { vittatus, (Say). / marginellus, Lec.

C. tricolor and *punctatus* resemble each other very closely. The characters given in the table being the only ones in which they differ. In color the head is nearly black; thorax rufous immaculate; elytra æneous or bluish black. Two specimens before me of *tricolor* have a short narrow space at the middle of the lateral margin of the elytra, rufous. The former spaces is widely diffused, occurring from Canada and the Middle States to Kansas, the latter is from Kansas. Additional collections may show them to be identical.

C. eximius and *nigriceps* resemble each other, differing scarcely as much as the two preceding species. Their colors are similar to the above species, the thorax having in addition a discal black spot varying from a longitudinal broad band to a size covering all but a narrow margin. Occurs in the Middle and upper Southern States.

C. marginicollis is larger than *eximius*, the anterior margin of the front not rufous, thorax with only a narrow pale margin, and the elytra much more densely punctured and opaque. Occurs in California.

C. cribrosus is a somewhat variable species. The typical and most abundant form has the thorax almost entirely black with a very narrow rufous margin reduced at times to a narrow space at each angle. The elytra are æneous black or nearly blue and unicolorous rather coarsely and densely punctured. Specimens occur with the anterior legs and middle femora fuscous and others with the legs entirely black. In several specimens from Owen's Valley, a narrow, short space at the lateral margin and a similar space at the middle third of the elytra, are rufous. Specimens with well developed wings have the humeri more distinct, several specimens without wings have the elytra nearly oval. These cannot be properly separated as the transition is gradual from those in which well developed wings occur through others with imperfect wings to those with none at all. This species occurs along the sea coast of California. The better developed are

those from the salt marshes of Owen's Valley, a region which has in many instances shown itself to be more closely allied in its fauna to San Diego than the circumjacent desert regions.

C. bipunctatus is a large species similar in its coloration to *tricolor*. There are on the disc of the thorax two small elongate black spots placed obliquely like the pale spots of the thorax of *Hippodamia convergens*, but diverging toward the base. In our series of this species may be found specimens varying in a manner similar to that between *tricolor* and *punctatus* and between *eximius* and *nigriceps*, that is, while many specimens have dusky abdomen and legs almost entirely black others again have the anterior and sometimes the middle legs rufous and the abdomen pale. Occurs from Kansas to Arizona.

C. marginicollis must be associated with *nigriceps* and *eximius*. The discal black spot is very large having but a narrow pale line which extends around the entire margin. As compared with either of the above mentioned species the thorax will be found more transverse but less rounded on the sides. The anterior legs and middle femora are rufous. *C. cribrosus* has a narrower thorax than either of those mentioned. Occurs at San Diego, Cal.

C. validus, n. sp.—Head in front of the eyes pale rufous, vertex and occiput black, finely and sparsely punctured. Thorax rufous with a black spot on each side of middle; twice broader than long, sides moderately rounded, broader behind the middle; surface smooth, shining with but few fine distant punctures. Elytra robust, pale rufous with a basal blue spot on each attaining the epipleura at humerus, narrowly separated at the suture, and a sub-apical larger spot equally distant from suture and apex but nearer the lateral margin; surface densely punctured. Body beneath, legs and antennæ pale rufous; meso-, metasternal and gular regions black. The entire surface of the body is sparsely clothed with cinereous hair and the upper surface with few erect short black hairs. Length .30 inch; 7.5 mm.

A large species with head and thorax resembling *bipunctatus* and elytra marked as in *quadrimaculatus*.

This species is rather larger in size and more robust than any at present known to me. It may be known at once from any of our four-maculate species by the pale legs and thoracic spots.

A very few specimens were collected by Dr. Palmer near the mouth of Yaqui River, Sonora.

C. quadrimaculatus and *histrio* resemble each other very closely, having exactly similar colors. The thorax of the former is smooth and shining, the latter sub-opaque, densely and very finely punctured. The former species is widely distributed, a single specimen of the

latter from Lower California is known to me in which however the apical spot does not attain the lateral margin.

C. pulchellus, n. sp.

This name is suggested for a form resembling *quadrimaculatus*, but differs in having the abdomen entirely, antennæ and legs (except the tibiæ) pale red; the tibiæ are pale fuscous. The rufous color of the body is much brighter than in any specimens of *quadrimaculatus*, and the form rather more slender. Length .18—.20 inch; 4.5—5 mm.

Occurs at Camp Grant, Arizona, during February.

C. balteatus is a large species with the blue patches on the elytra so large that the elytra may be said to be blue with a narrow sutural margin and transverse narrow band at anterior third rufous. The elytra are punctured as in *quadrimaculatus* and by this character may be known from *C. insulatus* which is smaller and with a greater extent of the surface of the elytra rufous.

C. limbellus, Gemminger, Col. Heft. VI, 1870; *limbatus* || Lec. New Species, 1865, p. 94.

This species is easily known by having the thorax rufous and immaculate and the elytra entirely bluish except a very narrow entire limb and a narrow sutural stripe. This species forms the link between those species with no pale limb and those in which the blue forms a broad vitta and by these latter to the four maculate species.

Occurs in Colorado and Nebraska.

C. laticollis, n. sp.—Head entirely black, very finely and sparsely punctured with sparse cinereous pubescence and erect black hairs. Thorax entirely rufous, twice broader than long, disc smooth, sides finely and moderately densely punctured. Elytra densely punctured, blue vitta narrowed at its anterior third. Body beneath black. Abdomen rufous. Anterior and bases of middle femora pale brownish, tibiæ and hind femora nearly black. Length .22 inch; 5.5 mm.

The entire upper surface is similarly clothed with pubescence as has been described on the head.

Occurs at Cape San Lucas, Lower California.

C. confluens differs from the above in being smaller, the blue elytral vitta almost interrupted and above all by the sides of the thorax in front being nearly straight so that the widest part of the thorax is behind the middle. The species above described having the thorax relatively broader and regularly rounded on the sides.

Occurs in Kansas.

C. vittatus and *marginellus* differ in having the elytra of the latter much less distinctly punctured while the black thoracic spot is large

leaving only a very narrow rufous margin. In *vittatus* the thoracic spot is usually small, occasionally as large as in *marginellus* and sometimes entirely wanting in which case the species appears to be more naturally associated with the preceding group. In any genus, where species are distinguished principally by colors, variations from a type must be expected and when such occur must be left for the determination of each student, as short reviews like the present cannot at all times be a guide.

The former species is eastern, while the latter, occurs only in California.

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TROPHIMUS, n. gen.

Head elongate, eyes rather distant from prothorax, epistoma membranous; antennæ slender, third joint slightly longer than the second and equal to fourth; maxillary palpi with last joint attenuate, longer than the second, third joint very short. Anterior tarsi of male four-jointed, five-jointed in female. Segments of abdomen membranous at middle; tarsi with first joint very slightly longer than the second. The above characters will serve to distinguish the genus from any in our fauna. It is allied to the European genera *Troglops* and *Homaodipnus* in which the maxillary palpi are alike in both sexes; but differing from either in having the last joint longer than the second

and gradually attenuate toward the tip. Allied also to *Cephalagonia* Wollaston, Journ. of Entomol. 1. 442, differs in the form of the head, and last joint of palpi. The third joint of antennæ is not as long as the fourth in *Cephalagonia* and the first tarsal joint long.

The occurence of genera allied to the above might have been expected from previous experience in the distribution of genera on the two continents. A leg of *Trophimus* ♂ mounted in Canada balsam shows but four joints to the anterior tarsi even under high powers of the compound microscope.

T. æneipennis, n. sp.—Black, shining. Head elongate oval, one half longer than broad, black, shining, impunctured; vertex slightly depressed. Antennæ black, basal joint paler. Thorax sub-orbicular, slightly truncate in front, rufous, with a black spot at anterior margin, smooth, shining, moderately convex. Elytra slightly broader at base than thorax and slightly broader toward apex, humeri distinct, surface alutaceous, black with æneous lustre. Body beneath black, shining, meso- and metathorax with few short cinereous hairs, legs black, sparsely cinereous pubescent. Length .12—.14 inch; 3—3.5 mm.

Resembles *Anthocomus* in appearance with the head nearly as long as in *Tanaops longiceps*, Lec. The thorax is rufous except a small black oval spot touching the apical margin.

From Colorado and New Mexico. For the opportunity of examining specimens I am indebted to Dr. Samuel Lewis of Philadelphia.

Attalus nigripes, n. sp.—Body black, shining. Head black with slight æneous tinge, front broadly impressed with but few fine punctures and sparsely clothed with cinereous hairs. Thorax rufous, one half broader than long, slightly narrowed behind, sides strongly, base moderately rounded apex sub-truncate; surface shining, sparsely finely punctured and with few yellowish hairs. Elytra scarcely wider at base than thorax, black with æneous tinge, shining, indistinctly alutaceous, and sparsely clothed with cinereous hair. Body beneath and legs black, sparsely cinereo-pubescent. Antennæ black, with joints 2 and 3 testaceous. Length .08—.10 inch; 2—2.5 mm.

The anterior tarsi of male have the second joint prolonged over and partly covering the third, those of the female being simple. The apices of the elytra are slightly less rounded in the male. The thorax usually rufous has in some specimens a small longitudinal black spot nearer the apex. The abdomen has a narrow membranous space at middle.

Specimens from the cabinet of Dr. Samuel Lewis. Collected in Colorado.

The genera allied to *Attalus* and *Anthocomus* appear not to be exactly parallel in authors. The *Anthocomus* of Erichson contained many elements now considered as belonging to *Attalus*. Duval restricts the latter name to those species in which, as in the above, the

anterior male tarsi have all the joints in line but the second having a process above which partly covers the third. *Ebæus* contains those in which the anterior tarsi of male have the joints 3—4—5 placed slightly obliquely to the first two while the second has a prolongation extending obliquely inwards and not covering the third joint at all. The characters drawn from the extent of membranous surface of epistoma or abdomen as noticed by Duval are not at all to be relied on in the separation of genera. Should future study of our species prove the correctness of the above views of Duval, *Acletus*, Lec., must be suppressed as not distict from *Ebæus*. While the *Ebæus* of Leconte is not that of Erichson who says, "Tarsi antici maris 5 articulati, *articulo secundo obliquo*." In the greater number of species of *Ebæus*, Lec., the anterior tarsi are simple in both sexes and not perceptibly differing. They are therefore more closely allied to *Anthocomus* which indeed they resemble. The males however differ in having the apices of elytra pale, prolonged and appendiculate. The discovery of other characters will probably necessitate the creation of a new genus for these species. *E. morulus*, Lec., is a true *Attalus*. The species of the latter genus are partially correct, some being *Ebæus*. In the present paper the name *Attalus* will be used for those species in which the second joint of anterior tarsus of male is prolonged over the third, concave beneath, and not oblique. *Ebæus* will therefore contain those in which the second joint is prolonged obliquely inwards and forwards so that the joint when viewed from beneath and on its outer side is very small and in the opposite directions large.

A. elegans, n. sp.— Head oval, shining, rufous, occupital region black. Thorax rufous, sub-orbicular, not broader than long, moderately convex, shining impunctured, less rounded at apex than at sides or base. Elytra paler rufous, alutaceous, sparsely punctured at sides, with a narrow basal black band at base not attaining the humeri and an oval black near the apex. Body beneath pale rufous, meso and metasternum shining black. Legs ferruginous except apices of anterior and middle, and the entire posterior femora black. Abdomen in great part membranous. Antennæ black, three basal joints rufous. Male with second joint of anterior tarsi prolonged over third, apices of elytra feebly impressed. Length .16 inch ; 4 mm.

Specimens collected at Keyesville, California, in the high Sierras on flowers of Æsculus.

Abundantly different from all our species in the colors and form of thorax, and recalls in its form species of Gnathium, the head and thorax very nearly equalling the length of elytra which are but slightly broader than the thorax. The elytra have few moderate punctures near the sides. The entire surface is very sparsely clothed with

cinereous pubescence, the elytra having in addition sparsely placed, short, black, erect hairs.

Malachius (Hapalorhinus) biguttulus, n. sp.—Body black with strong æneous or bluish tinge. Head moderately broad, shining, sparsely punctured, æneous. Thorax broader than long, moderately convex, shining, very sparsely and finely punctured: sides strongly rounded, margin moderately reflexed at base. Elytra slightly broader than thorax, æneous, moderately shining, scabrous, and with a yellow spot on each at suture near apex. Body beneath æneous black. Male antennæ serrate, black; apex of elytra slightly impressed and sinuous at margin. Length .14 inch; 3.5 mm.

The entire surface of body is sparsely clothed with cinereous pubescence, that of the elytra being longer and more nearly erect.

A single specimen from Fort Tejon, Cal., and may easily be distinguished from any of our species of *Malachius* of the group *Hapalorhinus* by the characters above given.

CHARIESSA, Perty.

C. elegans, n. sp.

Similar in form to *C. pilosa* (Forst.), Lec., but broader and differing as follows:

Subopaque, pale red, elytra bluish black. Head coarsely punctured and with semi-erect hairs: antennæ black with basal joint only red. Thorax broader than long, truncate in front sides strongly rounded and slightly narrower behind, base broadly rounded, with margin reflexed and black; surface densely and coarsely punctured and clothed with sub-erect hairs. Scutellum and elytra bluish-black, the latter coarsely and densely punctured and scabrous, the punctures coarse and less dense at the scutellar region, and with the humeral region somewhat smoother, surface sparsely clothed with short, black, sub-erect hairs. Body beneath and legs entirely pale red, and clothed with pale sanguineous pubescence; tarsi, maxillary palpi and tip of mandibles black. Length .46 inch; 11.5 mm.

The only species with which this might be confounded at first sight is *C. dichroa*, Lec., from which it differs in having the thorax densely punctured, the elytra more densely punctured and not submetallic and by the legs being entirely red. The basal margin of the thorax is more distinctly reflexed than any other of our species and the reflexed portion margined with black. The hairs clothing the head, thorax, under surface and legs are pale sanguineous being of a different shade of color from the surface on which they are placed.

From San Joaquin County, California. A single specimen was kindly placed in my cabinet by Mr. Wilhelm Jülich of New York.

ANELPISTUS, n. gen. (Melandryidæ.)

The genus for which the name is proposed differs from *Scotodes* Esch. by the following characters:

Thorax broader than long, sides rounded in front, gradually narrowing to base, hind angles not prominent. Elytra very little broader than the thorax.

This genus which may be considered the representation of *Scotodes* in our fauna resembles rather an *Emmesa* or a convex *Phryganophilus*. It possesses all the other characters of *Scotodes* even to the form of the tibial spurs, and can be distinguished only by the form of thorax. The latter genus, rare in Europe, is known to me only by the descriptions of authors and the figure of Duval (Genera, Pl. 86, fig. 429) in which the thorax is represented as being nearly as long as broad, the sides strongly rounded in front, sinuate behind, with the hind angles prominent.

A. americanus, n. sp.—Brownish-testaceous, slightly shining. Head densely and coarsely punctured and sparsely clothed with cinerous hairs. Thorax nearly black, more shining and less densely punctured than either head or elytra and sparsely clothed with cinereous pubescence; one-fourth broader than long, sub-truncate at apex, sides strongly rounded in front but gradually narrowing to the hind angles which are not prominent, base truncate with a distinct impression near the middle of the base of each elytron. Elytra elongate parallel, moderately convex, densely and coarsely punctured and clothed with cinereous pubescence, forming a more distinct band at the middle of each elytron very narrow at suture, and also at the apical fourth. Body beneath black, more shining, very finely and rather densely punctured, and sparsely clothed with cinereous hair. Legs brownish testaceous tibiæ with apical and middle third darker. Length .28 ♂—.34 ♀ inch; 7—8.5 mm,

The male has the antennæ slightly longer owing to a greater elongation of joints 3—7. The tibiæ are also very distinctly arcuate in ♂ and straight in ♀.

The cinereous hair forming the vestiture of the elytra in the male specimen before me appears to be more densely placed in a band across the middle, broad at margin and rapidly narrowing to suture; the apical fourth is also more densely clothed. This arrangement of vestiture may be owing to accident in pinning, as a specimen which had been preserved in alcohol is almost entirely nude. The male is smaller and more slender than the female.

For the two specimens in my cabinet I am indebted to Mr. Sanborn, of Boston, by whom they were taken in the White Mountains of New Hampshire.

DITYLUS, Fisch.

Ditylus bicolor, n. sp.—Color metallic blue, thorax red. Head densely not coarsely punctured. Thorax not longer than broad, sides slightly rounded in

front, feebly narrowed to base which has a narrow black margin; surface very coarsely but sparsely punctured, feebly convex, with a median shallow impression and two oblique very vague impressions near the hind angles. Elytra twice as wide as thorax at base, sub-parallel, metallic blue, sparsely clothed with short fine pale hairs, densely punctured and scabrous. Body beneath (except thorax) and legs metallic blue, shining, very sparsely punctured and clothed with pale hairs more densely placed on the pectus and legs. Length .45 inch; 11.5 mm.

Differs from all our *Ditylus* by its color and recalls *Asclera excavata*, Lec. Resembles *Nacerdes* in from rather than our larger *Ditylus*, but cannot be separated generically from the latter.

One specimen from Fort Klamath, Oregon. Mr. Wm. M. Gabb.

D. cyanipennis, n. sp.—Color bluish black, shining; elytra metallic blue. Head metallic blue, shining, coarsely not densely punctured. Thorax black, faintly bluish, rather coarsely and densely punctured, not longer than broad, sides feebly rounded in front, gradually narrower to base, disc with an indistinct impression on the median line on front, and a vague V-shaped impression with the apex toward the basal margin. Elytra scarcely as broad as twice the width of thoracic base, parallel, bright bluish with slight violet tinge, densely punctured and scabrous. Body beneath metallic blue, shining, sparsely punctured and with few pale hairs. Legs bluish-black. Length .30 inch; 7.5 mm.

This is our smallest *Ditylus* and resembles *Oxacis* still more than the preceding species, and may easily be distinguished from all others of the genus by sculpture and color, none of our other species except the preceding having any brilliancy, being for the most part blackish and opaque or with very faint metallic tinge.

Coast Range of California, south of San Francisco, Mr. Wm. M. Gabb.

Oxacis sericea, n. sp.—Brown or brownish testaceous, shining, rather densely clothed with greyish silken pubescence. Surface finely and densely punctured. Thorax longer than broad, slightly flattened, at the disc, sides strongly rounded in front, gradually narrower to base; paler than the elytra with median stripe and sides dusky. Elytra rather robust, densely pubescent; color brown or slightly paler with an oblique pale stripe extending from the humerus toward apex. Body beneath black, tip of abdomen pale, densely but very finely punctured. Length .28 ♂—.38 ♀ inch; 7—9.5 mm.

In this species the last joint of the maxillary palpi may be said to be elongate oval, broader nearer the base, apex rounded. Resembles in color *fuliginosa* but may be distinguished from all our species by the much more dense pubescence with hairs longer and less fine. The pubescence is so dense and closely recumbent as to hide almost entirely the color of the elytra. As in other species this varies somewhat in its coloration, the thorax being at times paler than the head or elytra, or the entire upper surface may be uniformly brownish. The lateral

and sutural margins of the elytra are paler in many specimens. The males are smaller and more slender than the females, and have the last joint of the antennæ sinuate.

I am indebted to Mr. Wm. M. Gabb, for this species, collected in central Nevada.

LYTTA, Fab.

Lytta magister, n. sp.—Black, moderately shining; head, thorax and legs orange yellow. Head smooth, shining, very sparsely and finely punctured, clypeus, labrum and parts of mouth black. Antennæ short, joints moniliform, base of first joint yellowish. Labrum feebly emarginate, and concave and with a slight carina at middle. Thorax smooth and shining, sub-hexagonal, sides not prominent. Elytra elongate, parallel with strongly elevated reticulations, less distinct at base and apex. Body beneath black, sub-opaque, densely and finely punctured. Legs orange yellow, tarsi black. Male; antennæ thickened at middle, joints 4—7 somewhat flattened and much broader than the following joints. Last abdominal segment deeply emarginate. Female; joints of antennæ gradually thicker to the tip; terminal abdomen segment rounded. Length 1.—1.40 inch; 26—36 mm.

This is the largest species known to inhabit our territory, and may be distinguished from all our species with sub-hexagonal thorax, by the form of male antennæ, deeply eroded or reticulate elytra and by the legs from the coxæ, excepting the tarsi, entirely yellow. No sexual differences are seen either in the legs or spurs. The middle tibiæ in both sexes are slightly arcuate, as in *vulnerata*. The sides of the thorax are much more obtusely angulate than either *vulnerata* or *Cooperi*.

Not rare in Owen's Valley, California. One specimen was taken in Arizona near Gila City. They were all found walking on the ground or feeding on plants. Although they have moderately developed wings none were found in flight. For many of the specimens obtained in Owen's Valley, I am indebted to Dr. H. M. Cronkhite, Assist. Surg. U. S. A.

Lytta deserticola, n. sp.—Black moderately shining, head, thorax and femora reddish yellow. Head moderately convex and shining with but few fine punctures, hind angles obtuse, clypeus, parts of mouth and antennæ black; labrum coarsely punctured, feebly emarginate. Thorax round, moderately convex with few punctures; basal narrow margin black. Elytra moderately robust, black, finely reticulate. Body beneath black, feebly shining and moderately densely clothed with very short black hairs. Coxæ, trochanters, tibiæ and tarsi black, femora reddish yellow except a small black space at base and tip; legs sparsely clothed with short black hairs. Length .76 inch; 19 mm.

Resembles *dichroa*, Lec., or *4-maculata* Chevr., in form, and may be known from any of our species with rounded thorax by its finely reticulate elytra and by its mode of coloration.

One female was collected south of Fort Whipple, Arizona.

Lytta refulgens, n. sp.—Brilliant metallic green, thorax reddish yellow with discoidal rounded metallic spot. Head shining metallic green with frontal yellowish spot; coarsely but densely punctured. Thorax regularly rounded on the sides, slightly broader than long, feebly convex and with few scattered punctures, disc with round metallic spot; narrow basal margin black. Elytra brilliant green, scabrous. Under surface more shining. Femora metallic green, tibiæ and tarsi black. Length .38—.40 inch; 9.5—10 mm.

Belongs to the same group with *æneipennis*, Lec., which has however a wider thorax, and rufous vertex. The elytra are dark olive green, and the under surface blackish green. The brilliant colors will enable the present species to be recognised at a glance.

Specimens from Millerton, California, collected by Mr. Wm. M. Gabb.

Lytta auriculata, n. sp.—Body black, elytra greenish or bluish black. Head with each hind angle and frontal spot red. Form slender, head black, coarsely punctured, more densely on the front. Thorax black, rather shining, coarsely punctured, sub-pentagonal, sides narrowed in front, sub-parallel or slightly convergent behind the middle. Elytra one half broader than the thorax, bluish or greenish black, scabrous. Beneath black, shining, coarsely but very sparsely punctured, and with slight pubescence. Length .35—.46 inch; 9—11.5 mm.

Belongs with *æneipennis* and *smaragdula*, differing by its more elongate from sub-pentagonal thorax and color. The antennæ are long, nearly two thirds the length of body.

Several specimens from Kern River region of California; found on a small species of Lupin in flower.

Lytta compressicornis, n. sp.—Brilliant blue sometimes slightly violet. Head entirely blue, very coarsely but sparsely punctured. Thorax narrower than the head, sub-quadrate, feebly narrowed at base, moderately convex, with few coarse irregularly placed punctures. Elytra twice as wide as thorax, finely scabrous, gradually wider toward apex. Body beneath blue, shining, sparsely punctured. Legs, mouth and antennæ black. Antennæ with joints 5—11 strongly compressed in both sexes, broader in the male. Length .30—.50 inch; 8—12 mm.

In both sexes the spurs of the hind tibiæ are slender and acute, the inner longer. The tibiæ are straight. This species differs however from any previously described, at least in our fauna, in having the antennæ very strongly compressed. The joints from 5 to 11 are transverse, more than twice broader than long. The antennæ are short, not longer than head and thorax. The male has the last abdominal segment more deeply and acutely emarginate than is usual in the species allied most nearly in general appearance, e. g. *convexa*, Lec.

From Owen's Valley, California, collected on a plant resembling our Canada thistle but with yellow flowers.

CALOSPASTA, Lec.

Calospasta nemognathoides, n. sp.—Body black, moderately shining. Thorax rufous. Head black, shining, scarcely punctured. Thorax rufous, sub-quadrate, sides moderately rounded, feebly narrower in front: disc moderately convex, shining with very fine punctures. Elytra at base one half broader than the thorax, broader behind the middle, scabrous, black. Body beneath black, shining and with few short yellowish hairs, abdomen sub-opaque. Legs black, shining, sparsely but coarsely punctured and with few yellowish hairs. Length .36 inch; 9 mm.

Resembles *Nemognatha atripennis*, Lec., in appearance. The tarsal claws are as in *C. elegans*, Lec., the two portions of each claw connate, the under shorter than the upper. The antennæ are as in *C. elegans*. The surface has been entirely deprived of pubescence.

One female from Owen's Valley, Cal.

C. perpulchra, n. sp.—Shining blue, elytra with a large humeral spot, median transverse band and sub-apical yellow spot. Head coarsely but sparsely punctured. Thorax longer than broad, narrowing in front, sides behind the middle sub-parallel; disc moderately convex, shining, coarsely but sparsely punctured. Elytra nearly twice broader than thorax, parallel, scabrous, moderately convex, sparsely clothed with yellowish hairs. Beneath bluish, shining, sparsely clothed with short yellowish hairs. Length .28—.40 inch, 7—10 mm.

This species varies greatly in its markings. One specimen in my cabinet is entirely blue; two have the humeri alone yellow; the greater number have a humeral space and irregular transverse band behind the middle yellow, not attaining either suture or margin, others have a sub-apical spot in addition. The sculpture of the front varies considerably. In some specimens the surface is irregular without any definite formation of ridges or depressions; one specimen has a moderately convex and prominent tubercle within the insertion of the antennæ; others again have a broad median groove bounded by a ridge on each side and a smaller tubercle within the insertion of the antennæ, limited within by a slight groove. This species may be distinguished from any varieties of *elegans* by the more elongate thorax, surface more shining and very much less densely pubescent.

Collected in Owen's Valley, and Posey Flat (S. E. Sierra region) California.

In the males the front is deeply grooved at middle with a prominent tubercle within the base of the antennæ, the basal joints of the anterior tarsi are also distinctly dilated.

C. elegans, Lec. (Epicauta) Ann. Lyc. V, 161; (Lytta) Lec. Proc. Acad. 1853, 341; (Calospasta) Class. Col. N. A. 273.

Specimens in my cabinet from Cariso Creek have the yellow vitta of the elytra shortened so as to become merely a humeral elongate spot

acute at its apical end. With the known variation of the preceding species I am unwilling to separate this as distinct but prefer to consider it nearly a variety under the name of *humeralis*. Both males and females are before me, the anterior tarsi of the male as distinctly dilated as in the preceding species. The typical specimens in the cabinet of Dr. Leconte are females, hence the failure to mention this very obvious character. In the male the front is rather deeply sulcate but the lateral tubercle is less evident than in the male of *purpulchra*.

C. mirabilis, n. sp.—Pale rufous, elytra pale yellowish. Head broadly oval, gibbous between the bases of the antennæ, sparsely punctured. Thorax oval, as broad as long, strongly narrowed in front, and slightly narrower at base; median and basal impressions moderately deep. Elytra oblong, broader behind, humeri moderately prominent, margin reflexed, suture elevated, and with four strongly elevated costæ on the disc of each elytron, extending from base nearly to apex. Color pale yellow, with four small brown spots at base, arranged in arc with convexity backwards, an irregular narrow transverse band at middle interrupted by the costæ, and a narrower sub-apical band. Body beneath and legs, pale rufous, abdomen paler and more shining. Length .16 inch; 11.5 mm.

The entire surface of body is very sparsely clothed with very short silvery white hairs, longer on the legs. The intervals between the elytral costæ are nearly flat and sparsely punctured. The small brown spots at base are arranged between the suture and first costa, and between the first and second. The tarsal claws are divided, the upper and lower portions being connate, and the latter shorter. The antennæ are as in the other species of *Calospasta*. With one exception (*Pleuropompha costata*, Lec.), this is the only Meloide in our fauna with costate elytra.

The specimen in my cabinet is from Southern Arizona, and was obtained through the Agricultural Bureau at Washington.

Tegrodera erosa, Lec. Ann. Lyc. V, 159.

Two varieties of the species occur. Specimens collected by Mr Gabb in Lower California have the elytra very coarsely reticulate and the transverse black band entirely wanting. Those collected by myself in Owen's Valley have the elytra more finely reticulate and a broad median and apical black band. Specimens from San Diego are nearly intermediate in sculpture and color. I am unable to detect any differences of a specific nature. The male has the last segment of abdomen slightly emarginate.

Zonitis longicornis, n. sp.—Elongate, pale brownish testaceous; opaque; margin, suture and narrow stripe extending from humerus to tip paler. Head nearly black, vertex paler very densely and coarsely punctured, rugose.

Thorax as broad as long, sides rounded and narrowed to base; disc with broad darker space at middle; densely and rather coarsely punctured. Elytra elongate, parallel, sutural and lateral margins and narrow oblique stripe extending from the humerus to near the apex, pale testaceous; densely punctured and scabrous. Body beneath brownish, densely punctured. Legs densely punctured; coxæ, base and apex of femora, base of tibiæ and proximal end of tarsal joints pale testaceous. Antennæ long, slender, testaceous, equalling three fourths the length of body. Length .40 inch; 10 mm.

Resembles *Epicauta* rather than *Zonitis*, and may be distinguished from all our species by its long antennæ and very densely punctured surface as well as by the system of coloration.

One specimen from Central Illinois, is known and had been, from its form placed among the species of *Epicauta* in my cabinet.

GNATHIUM, Kirby.

The characters separating this genus from *Nemognatha* are very slight, and the addition of new species seems to be gradually lessening their value, the only character remaining being a slight thickening of the outer joints of the antennæ.

Our species are as follows:

Color yellowish-testaceous.
- Elytra opaque, densely punctured.
  - Thorax elongate ..... **minimum.**
  - Thorax not longer than broad, sides strongly rounded ..... **texanum.**
- Elytra shining, feebly punctured; thorax campanulate ..... **nitidum.**

Color black, thorax yellowish testaceous.
- Elytra coarsely, not densely punctured ..... **flavicolle.**

G. minimum. Say, Journ. Acad. III, p. 306.

Differs from the following species in the form of thorax which may be described as very elongate oval slightly flattened above, sides feebly rounded, truncate at base and apex. The surface is evenly punctured the punctures moderately coarse, much more so than in any other species known to me. The elytral punctures are coarser and more densely placed; surface with semi-recumbent hairs which vary in color. Body beneath, darker in color, sometimes brown with the legs dusky. In the species with dark under surface the hairs are black, when pale or similar in color to the upper surface the hairs are also pale. Length .30 inch; 7.5 mm.

Kansas, New Mexico and Texas.

G. texanum. n. sp.

Similar to *minimum* but smaller. Thorax not longer than broad, wider in front of middle, sides strongly rounded in front. Surface sparsely and irregularly coarsely punctured. Elytra more finely and less densely punctured than in *minimum*, and sparsely clothed with

short black hairs, semi-recumbent near the base and erect behind the middle. Body beneath slightly darker than the upper surface. Length .25 inch; 6.5 mm.

This species may be distinguished from *minimum* by the form of thorax. The head is also less elongate, and the maxillary prolongations about one and a half times the length of head. In the preceding species they are longer than half the entire length of body.

Specimens were collected by Dr. A. L. Heerman in Texas.

G. nitidum, n. sp.—Form slender, color yellowish testaceous, shining. Head shining, densely punctured within the eyes, vertex smooth. Thorax campanulate, slightly longer than wide; surface smooth, shining with few fine widely scattered punctures. Elytra shining with fine distantly placed punctures arranged in irregular striæ. Body beneath pale brownish, legs yellow. Antennæ black, first and sometimes second joint pale. Length .20 inch; 5 mm.

Differs from all our species by its shining surface. Recent specimens have but few rather longer hairs than either of the preceding species. The head is less elongate, the hind angles more rounded and the maxillary prolongations scarcely longer than the head.

Specimens were collected in Owen's Valley, California.

G. flavicolle, Lec. Journ. Acad. Ser. II. iv, p. 24.

From all the preceding species it differs in color, having the entire body black except the thorax, which is yellow. It appears to resemble *francilloni*, Kirby, and for the sake of comparison and future ease in study I append the original descriptions.

G. flavicolle. Lec.—Nigrum, capite nitido parce punctato, elongato vertice sublæve, thorace conico flavo nitido, punctis paucis notato, elytris thorace duplo latioribus, fortiter haud dense punctatis, piceis postice ad suturam pallidioribus, pube brevi nigra erecta vestitis; mandibulis elongatis, antennis extrorsum sensim incrassatis; maxillis pallidis corpore duplo brevioribus. Long .17 inch.

Texas.

G. francilloni, Kirby,—Corpus obscureatum fere, pilosulum, supra nigrum, subtus piceum. Caput deflexum, elongatum punctatum; disco lævuisculo, collo brevi angusto picco insidens. Mandibulæ capite vix breviores, protensæ, apice incurvæ, rufæ. Antennæ apicem versus sensim crassiores, articulo secundo quarti fere longitudine, tertio reliquiis longiori, sequentibus fere obconicis, 8—9—10 sub-cylindricis externo elongato-conico. Thorax campanulatis, glaber, rufus, brevissimus. Elytra rugulosa. Tibiæ bicalcaratæ. Tarsi unguiculati; unguiculis bipartitis. Long. 2¾ lines (.22 inch).

Georgia.

Without wishing to express a definite opinion regarding the identity of the two, it must be acknowledged that the two descriptions approxi-

mate each other very closely. The type of *flavicolle* does not seem to be a fully developed specimen of the species to which it belongs. It must also be seen that Kirby's description of the thorax hardly corresponds either with itself or with our *flavicolle* where he writes "campanulate—and very short." Kirby's description may be found in Linnean Transactions, xii, p. 424.

Mycetina pallida. n. sp.—Elongate, pale rufo-testaceous, moderately shining. Thorax sparsely and very finely punctured, longitudinal and basal impressions well marked. Elytra less shining, very finely but sparsely punctured and with minute hairs. Beneath more distinctly punctured, paler; prosternum narrow, depressed. Legs slightly darker than the under surface; antennæ brownish. Length .26 inch; 6.5 mm.

A female specimen in the cabinet of Dr. Leconte, received by Dr. S. Lewis, from Colorado.

Resembles in form *M. læta* (Lec.) and not differing from that species in the relative size of its parts. Differs from all our species in its entirely uniform pale rufo-testaceous color. The elytra are somewhat more opaque than the rest of the surface and under high power are very finely alutaceous, and with rather sparsely placed fine punctures, each bearing a minute slender hair.

M. limbata, n. sp.—Piceous black, shining; entire upper surface with fine sparsely placed punctures, each bearing a very minute hair, those of the thorax less distinctly impressed; transverse and longitudinal impressions of thorax distinct though not deep. Elytra piceous black, entire margin from humerus to apex testaceous and with a narrow band extending inwards from the middle of margin slightly obliquely towards the suture without attaining it. Antennæ not closely articulate and with the palpi, ferruginous. Under surface black, sub-opaque, more coarsely punctured than the upper surface. Legs ferruginous. Length .18 inch; 4.5 mm.

This species has exactly the form of *Endomychus biguttatus*, and may be easily distinguished from any of our species of *Mycetina*, by the system of coloration. Belongs to same group with *perpulchra* in which the mesosternum is broader than long and sub-pentagonal. The pale margin of the elytra becomes much broader toward the apex and extends slightly along the suture.

Occurs in California. For the unique in my cabinet I am indebted to Mr. James Behrens, of San Francisco.

Epipocus unicolor, n. sp.—Rufo-ferrugineus, sparsely clothed with short golden hairs. Head rather densely and coarsely punctured. Thorax one-half broader than long, deeply emarginate in front, angles obtuse; sides rounded in front of, sinuate behind middle, hind angles acute, moderately prominent; disc coarsely but rather sparsely punctured between grooves, more finely and densely toward the sides; grooves moderately deep and slightly convergent and extending two thirds toward apex. Elytra broader at base than thorax, moder-

ately convex, apices obliquely truncate with the outer angle more prominent; surface equally punctured, punctures not coarse, more densely placed than on thorax. Body beneath, legs and antennæ similar in color to upper surface. Meso- and metathorax sparsely, abdomen finely, epipleuræ coarsely punctured and sparsely clothed with golden hairs. Antennæ nearly half the length of body, third joint slightly longer than fourth. *Male* with minute spur on inner side of anterior tibiæ below the middle. Length .22—.28 inch; 5.5—7 mm.

Colorado, Dr. Samuel Lewis. Very abundant under damp logs at Camp Grant, Arizona.

This species is evidently allied to *longicornis*, Gerst., of which specimens are unknown to me. This species appears from the description to be abundantly distinct from the one above described, and is about equal in size. Resembles *punctatus*, Lec., in form.

Engis californica, n. sp.—Elongate oval. Head ferruginous, moderately coarsely but not densely punctured. Thorax ferruginous, one-fourth broader than long, sides moderately rounded from base, scarcely narrow at apex; disc moderately coarsely and densely punctured. Elytra not broader than thorax, black or brownish with a humeral spot ferruginous; surface with regular striæ of fine punctures moderately closely placed. Body beneath brownish with the entire margin and tip of abdomen somewhat paler. Legs ferruginous antennæ brown. Length .10—.14 inch; 25—3.5 mm.

This species may be readily distinguished from *quadrimaculata*, by the ferruginous head and thorax and by the elytra having only a humeral pale spot. The latter is irregular in form and extent, usually gradually vanishing in the darker color around it. The thorax is also less rounded in front, more convex and densely punctured. It resembles somewhat the figure of *E. humeralis*, Fabr. (Duval, Genera, pl. 75, fig. 357), but the thorax is more rounded and scarcely narrowed in front.

Specimens in my cabinet from Fort Crook, Sacramento, and Fort Tejon, Cal. Occurs under bark or in fungi.

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Descriptive Catalogue of the species of NEBRIA and PELOPHILA of the United States.

BY GEO. H. HORN, M. D.

The two genera *Nebria* and *Pelophila* appear to be sufficiently distinct to be retained apart. The following tables, the result of a short study of our species, may be useful to those to whom the widely scattered specific descriptions are inaccessible.

NEBRIA.—Anterior tarsus of male moderately or feebly dilated; antennæ slender, joints all cylindrical, equalling in length two-thirds or more the length of the body; scutellar stria of elytra always distinct.

PELOPHILA.—Anterior tarsus of male broadly dilated; antennæ stout, shorter than half the length of body, joints 3—4 thicker at tip, joints 3—11 distinctly flattened; scutellar stria obliterated: body robust, *Blethisa*-form.

NEBRIA, Latr.

Humeri of elytra obliterated; body either apterous or feebly winged.
Hind angles of thorax rectangular; color black.....**ingens.**
Hind angles of thorax not rectangular: sides oblique; color livid.....**diversa.**
Humeri of elytra distinct, at least moderately prominent.
Sides of elytra sub-parallel.
Metallic species.
Sides of thorax oblique, hind angles not rectangular.
Color bluish-metallic; dorsal punctured faint or wanting.....**virescens.**
Sides of thorax strongly sinuate; angles rectangular.
Elytra elongate, much longer than twice the width at base, slightly broader behind middle; color black, with tinge of green.....**gregaria.**
Elytra broader, sub-parallel; not longer than twice the width at base.
Antennæ and legs black.
Elytra broad, depressed, deeply striate, dorsal punctures very distinct.....**metallica.**
Elytra more elongate and convex, striæ and punctures faint.....**Gebleri.**
Antennæ and legs rufous or rufo-piceous.
Four or five strong punctures on third interval.....**viridis.**
Black species.
Sides of thorax oblique not sinuate near the base.
Third stria with a single puncture.....**obliqua.**
Third stria with at least four punctures.....**suturalis.**
Sides of thorax sinuate, hind angles rectangular.
Hind angles scarcely rectangular; dorsal punctures faint.....**hudsonica.**
Hind angles rectangular; dorsal punctures distinct.....**Sahlbergi.**
Hind angles rectangular; dorsal punctures of third and fifth intervals equally distinct and deep, femora rufous.....**bifaria.**
Sides of elytra strongly rounded.
Legs black.
Hind angles of thorax very distinctly rectangular.....**Rathvoni.**
Hind angles scarcely rectangular.....**Mannerheimii.**
Legs pale.
Hind angles of thorax rectangular.....**Eschscholtzii.**
Hind angles not rectangular, sides of thorax oblique ..... **pallipes.**

R. ingens, n. sp.—Black, shining, apterous. Head smooth with two shallow impressions in front, rugose at bottom, and between the eyes two ferruginous spots. Thorax similar in form to *metallica*, but with the sides less rounded in front; anterior angles obtuse, hind angles rectangular, base feebly emarginate

at middle; disc feebly convex, sides very narrowly margined, margin slightly reflexed, surface smooth, anteriorly slightly rugose, at sides more rugose and punctured, base deeply transversely impressed, and a deep impression within the hind angles, coarsely but sparsely punctured and rugose. Elytra elongate-oval, humeri totally obliterated, surface rather deeply striate, striæ distantly punctured, interspaces feebly convex. Body beneath smooth, black, shining. Legs black, long, slender. Length .55 ♂—.64 ♀ inch; 14—16 mm.

Head short and robust, eyes less prominent than in any other of our species. Sides of thorax moderately rounded in front, strongly sinuate behind, hind angles strictly rectangular. The lateral margin of thorax very narrow and feebly reflexed. Anterior transverse impression faint, longitudinal, distinct but not strong. Elytra elongate-oval, sides rounded, slightly broader behind the middle in the male. The striæ are nearly as deep as in *pallipes*, distantly punctured, interstices feebly convex and without dorsal punctures.

The *Male*, has the anterior tarsi feebly dilated; last abdominal segment with a broad shallow excavation divided longitudinally by a ridge.

The *Female*, has a narrow coriaceous band between the third and fourth abdominal segments at middle.

Resembles by its elongate form *gregaria*, Esch., but easily known by the oval elytra, the thorax narrower behind, and less margined on the sides.

The mentum, at the base of the emargination, is not armed with a broadly emarginate tooth, but distinctly bisinuate, the ligula is feebly prominent. As the form of the mentum tooth and the degree of its emargination vary, I have not thought it advisable to separate it from *Nebria* as a distinct genus.

Two specimens of this species were collected by the Geological Survey party under Prof. Brewer, in the high Sierra Nevada Mountains east of Visalia, California.

N. diversa, Lec. List. Col. N. A. p. 2; *livida* Lec. Proc. Acad. 1859, p. 84.

This species is easily known by its pale yellowish testaceous color, and oval elytra, with the humeri rounded. The species is not apterous, the wings being very distinct but rather poorly developed. The elytra have more distinct striæ, moderately deep but impunctured. The number of large punctures in the striæ is rather variable, and are in the third four, fifth two, and sixth three, usually. The eighth striæ has however very many large punctures causing the edge of the next outer interval to appear coarsely serrate. The sides of the thorax are feebly sinuate at base but the angles are not rectangular.

The color beneath testaceous, sides of abdomen brownish. Length .40—.44 inch; 10—11 mm.

Three specimens from Cape Flattery, Oregon.

N. virescens. (Chaud. inedit.)—Bluish-green, metallic, shining. Head on each side within and slightly before the eyes sub-triangularly impressed and rugose. Thorax about one-third broader than long, sides broadly rounded in front, oblique behind, hind angles moderately prominent, but not rectangular; margin moderately broadly reflexed; apical transverse impression very faint, longitudinal impression distinct, basal impression broad, rather deep, angular impressions broad, not linear; surface feebly convex, smooth, sparsely punctured at basal margin. Elytra oblong, feebly convex, but not flattened, sides sub-parallel, feebly rounded; surface feebly striate, striæ scarcely evident at the sides, distinctly punctured, discal intervals very feebly convex, third striæ with two larger punctures, one in front of middle another about one-third from apex. Body beneath and legs black, smooth and shining. Species winged; humeri moderately prominent. Length .48 inch; 12 mm.

This species may be readily recognised by its color and by the sides of the thorax being nearly rounded from apex to base, being but slightly oblique behind with the angle not rectangular.

A single specimen is in the cabinet of Dr. Leconte sent probably by M. Sallé under the name cited. I know of no description published, and therefore give the characters in detail. The specimen is said to be from Vancouver.

N. gregaria, Fischer, Ent. Russ. i. 72, pl. 6, fig. 2; Esch. Mem. Mosc. 1823, vi, p. 101.

An elongate species, black, with distinct bluish-green metallic tinge. The sides of the thorax are but moderately rounded in front. The basal angles are distinctly rectangular. The elytra are more elongate than any of our species, and are slightly broader behind the middle. The humeri are but feebly prominent, scarcely more so than in *diversa*. The striæ are rather deep, not punctured, the third with five feeble foveæ, interspaces convex. Body beneath black, shining, legs piceous-black. Winged. Length .46 inch; 11.5 mm.

Alaska. One specimen, probably sent by Mannerheim, is in the cabinet of Dr. Leconte.

N. metallica, Fischer, Ent. Russ. i, p. 71, pl. 6, fig. 1; Esch. Mem. Mosc. 1823, vi, p. 100.

An abundant species in Russian America, varying in color from violet or cupreous to greenish-metallic. The head and thorax are usually darker than the elytra, sometimes black. The sides of thorax are strongly rounded in front, deeply sinuate behind, with the basal angles rectangular. The lateral margin is broad and moderately reflexed. Elytra oblong, sides sub-parallel and feebly rounded, surface

deeply striate, striæ punctured, intervals moderately convex, the third, fifth and seventh interrupted by three punctures on each, the third at times with four punctures. The body beneath is black. Length .48—.54 inch; 12—14.5 mm.

N. Gebleri. Dej. Spec. V, 573; Esch. Zool. Atlas, V, p. 23, pl. 25, fig. 3.

This species is not unlike the preceding in its general form, but more elongate. Color metallic-green changing to cupreous and violet. The thorax is less broad than in *metallica*, sides less rounded, margin moderate, distinctly reflexed, hind angles rectangular, but less distinctly than in the species mentioned. The elytra are sub-parallel, feebly striate, striæ very faintly punctured. Interstices flat, the third with five or four punctures, the seventh with three. Length .40 inch; 10 mm.

Occurs only in Russian America.

N. viridis, n. sp.—Brilliant metallic-green. Head smooth, impunctured, with vague frontal impressions. Thorax similar in shape to *Silhbergi*, one-half broader than long, sides strongly rounded in front, deeply sinuate behind, hind angles rectangular, margin slightly reflexed; surface smooth with coarse punctures along the margin, and in the basal transverse impression; apical and median impressions moderate, basal impression deep. Elytra parallel, humeri moderately prominent, surface moderately convex, distinctly striate, striæ finely but distantly punctured, intervals feebly convex and with five impressions on the second, the first two very distant, those toward the apex close. Body beneath black, antennæ, palpi, and legs rufous. Length .30 inch; 7.5 mm.

This species may be readily known by its color, being the only species of an uniformly metallic-green in our series.

Two specimens received by Mr. Ulke from St. Michaels, Alaska.

N. obliqua, Lec. Proc. Acad. 1866, p. 363.

This species resembles *N. Mannerheimii*, Esch., but has the sides of the elytra more nearly parallel. The third stria has a single puncture at about one-third from the apex, and a very faint trace of another still nearer the apex. The striæ are rather deep, scarcely punctured, the intervals flat. The color is black, without any trace of metallic lustre, the legs are piceous and the tarsi, antennæ and palpi paler. Length .44 inch; 11 mm.

I have seen two specimens from Colorado.

N. suturalis, Lec. Agass. Lake Super. p. 209.—Black, sometimes shining, depressed. Sides of thorax oblique, as in the preceding species. Elytra with sub-parallel, feebly rounded, sides; surface moderately deeply striate, striæ distinctly but irregularly punctured, intervals flat; third striæ with four distinct large punctures. Length .40—.41 inch; 10—11.5 mm.

Occurs in the Lake Superior region, and in northern New Hampshire.

N. hudsonica, Lec. New Species, p. 3.

Closely related to *Sahlbergi*, but differs in its more depressed form and by hind angles of the thorax being scarcely rectangular. The sides of the thorax are less rounded in front and feebly sinuate behind, and it thus approaches *obliqua* in form The sides of the elytra are nearly parallel, the surface faintly striate, the striæ scarcely punctured, and the third with four larger punctures rather vaguely defined. Length .40—.42 inch ; 10—10.5 mm.

Two specimens from Saskatchewan, Hudson's Bay Territory.

N. Sahlbergi, Fisch. Ent. Russ. iii, p. 254, pl. 14, fig. 2 ; Esch. Zool. Atlas, 1833, p. 23 ; *castanipes*, Kby. N. Z. iv, p. 20, *mœsta* (var.) Lec. Agass. Lake Super. p. 209.

This species is somewhat variable in the form of the thorax. From typical specimens in Dr. Leconte's cabinet, and a long series of specimens, the following specific characters have been drawn.

Head smooth, impunctured, frontal impression shallow. Thorax one-half broader than long, sides strongly rounded in front, sinuate behind, hind angles always rectangular, sometimes slightly prominent outwards ; lateral margin moderately reflexed, and with few coarse punctures within, basal transverse impression moderately deep and sparsely coarsely punctured ; median and apical impressions moderate. Elytra sub-parallel, faintly striate, striæ distinctly punctured, third stria with four, sometimes five moderately distinct large punctures, intervals flat. Body totally black, legs piceous or castaneous, with the tibiæ at times paler. Length .40 inch ; 10 mm.

The form called by Dr. Leconte, *mœsta*, is slightly more depressed, in other respects not differing from the true type. In the *MSS.* of the late Dr. Zimmerman the opinion is expressed that the *Helobia* (*Nebria*) *castanipes*, Kirby, is identical with this species. The description of Kirby applies much more nearly to this than any other of our species, and is moreover the most abundant species in the region from which the collections sent to Kirby were derived. The description of Kirby certainly does not apply to the species to which it is attached in the cabinet of Dr. Leconte, which is moreover found as far as known only in upper California and Oregon.

This species has a wide distribution, being found along the Pacific region from Sitkha to Oregon and eastward to New Hampshire.

N. bifaria, Mann. Bull. Mosc. 1853, iii, p. 128.—Black, shining. Thorax rather small, disc transversely wrinkled, especially toward the sides, sides strongly rounded in front, sinuate behind, hind angles sub-rectangular. Elytra sub-parallel, rather deeply striate, striæ punctured, intervals convex, the third with four, the fifth with three large punctures. Body beneath black, femora rufous, tibiæ black. Length .40 inch ; 10 mm.

I have seen but one specimen from Alaska, collected at St Michaels.

N. Rathvoni, Lec. Trans. Am. Phil. Soc. x, 400.

With this species begins a small series in which the sides of the elytra cease to be sub-parallel and become rounded, and the form is therefore oval. The thorax is similar in form to *Sahlbergi*, the hind angles being very distinctly rectangular. The elytral striæ are not deep, and finely but not closely punctured, the interstices are flat, the third with three, the seventh with five larger punctures. Body entirely black. Length .48 inch; 12 mm.

A single specimen from Sacramento, California, is known in collections.

N. Mannerheimii, Fisch. Ent. Russ. iii, 253, pl. 14, fig, 5; Esch. Zool. Atlas, 1833, p. 23.

Closely allied to the preceding, and differing only in having the hind angles of the thorax less distinctly rectangular, and in a different arrangement of the larger punctures of the elytra. The elytra are also more broadly rounded and are faintly striate, the striæ however varying in depth and distinctness of punctation in different specimens. The third stria has five very distinct large punctures. The intervals are flat. Body entirely black, antennæ, palpi and tarsi castaneous.

Occurs in Alaska and Vancouver Island.

N. Eschscholtzii, Men. Bull. Acad. Petrop. ii, 1844, p. 55; *castanipes* ‡ Lec. List. Col. N. A. p. 2.

The description of Menetries applies so distinctly to that marked *castanipes* in our cabinet that I cannot do better than translate the original.

"Black; elytra elongate oval, striate, striæ obsoletely punctured, and with three impressed punctures; antennæ and legs pale rufous.

"It has very nearly the size of *N. Mannerheimii*, but the elytra have a more oval form, being however a little less broad at the base; it is black, with antennæ and legs clear red, the palpi are rufous, also the mandibles which are brownish at the tip; on the upper surface of the head near each eye a small oblong rufous spot. The thorax is rather broader at its middle than the above cited species, and slightly more convex. The elytra are striate, the striæ faint and slightly punctuate, the intervals are more flat, and on the third stria may be seen three moderately large impressed punctures. From California. Length .40—.46 inch; 10—11,5 mm.

To the above description might be added, "hind angles of the thorax distinctly rectangular," and nothing further is necessary to render evident what Menetries had in view when the description was being written.

Three specimens are before me; one in Dr. Leconte's cabinet is a

duplicate of the above description, two in my own cabinet have the elytra more deeply striate.

One specimen from Oregon, two from California, the latter presented by Messrs. Edwards and Behrens of San Francisco.

N. pallipes, Say, Trans. Am. Phil. Soc. ii, p. 78.

The species is so widely distributed over our country and is so well known that an extended description is unnecessary. It may be known by its very broad thorax with strongly rounded sides, oblique behind, with angles obtuse, not rectangular. The elytra are deeply striate, the striæ punctured, the third having fine very distinctly impressed longer punctures; interspaces convex. Antennæ and legs pale rufous or yellowish. Length .40—.46 inch; 10—11.5 mm.

Distributed through a region northward from the fourtieth parallel, and east of Mississippi River.

The following are said to have been found within our limits, either at the north eastern or north western extremeties of our continent.

N. carbonaria, Esch. Zool. Atlas, v, p. 24. Kamtschatka. In Sitkha.

N. nivalis, Payk. Fauna Suec. p. 119. Lapland. In Greenland.

Other species inhabiting the north eastern extremity of Asia may also be found in Sitkha.

The following are unknown and irrecognisable.

N. elias, Motsch. Bull. Mosc. 1865, iv, p. 276.

N. mollis, Motsch. id. p. 274.

Both species are said to be black and resemble *mœsta*, and are three and a fourth lines long.

PELOPHILA, Dej.

The characters given at the beginning of this paper seem to warrant the retaining of the genus as distinct from *Nebria*. Our species are few and agree in their robust form and stout antennæ, and all have the hind angles of the thorax rectangular.

P. Eschscholtzii, Mann. Humm. Essais Entom. iii, p. 40; Bull. Mosc. 1843, ii, p. 190.—Black with slight æneous tinge. Head robust, frontal impressions moderately deep and strongly wrinkled. Thorax one-half broader than long, nearly as broad at middle as the base of the elytra; sides moderately rounded in front, sinuate behind, with the basal angles rectangular; margin narrow, slightly reflexed; apical transverse impression moderate and rather coarsely punctured, median impression faint, basal transverse impression moderately deep and sparsely punctured. Elytra oblong, slightly broader behind, sides feebly rounded, striæ deep and coarsely punctured, intervals convex, the third with six or seven large deep punctures, the fifth with two in front of middle. Body beneath black, legs piceous. Length .48 inch; 12 mm.

The margin of the body in some specimens is said to be æneous green, none of our specimens however show this character.

Occurs in Sitkha and at Methy.

P. rudis, Lec. (*Nebria*) New Species, p. 3.—Æneous-black, shining. Frontal impressions faint and with few obsolete wrinkles. Thorax one-half broader than long, sides moderately rounded in front, feebly sinuate behind, hind angles rectangular, margin feebly reflexed, apical and median impressions faint, basal impression moderate, disc smooth with sparsely placed punctures along the basal and apical impressions. Elytra with striæ replaced by lines of moderately coarse punctures, intervals moderately convex, the third with four or five, the fifth with one impressed coarser puncture. Body beneath and legs black. Length .44 inch; 11 mm.

One specimen from Methy.

P. Ulkei, n. sp.—Brownish-æneous, shining. Head with moderately deep frontal impressions, coarsely longitudinally wrinkled, and behind the eyes strigose. Thorax nearly twice as broad as long, slightly narrower at base, sides moderately rounded in front, slightly sinuate, behind basal angles, rectangular, median and apical impressions faint, the latter sparsely punctured, basal impression broad, moderately deep and punctured, angular impressions deep. Elytra oblong, sides feebly rounded and slightly broader behind the middle, striæ faint, obsoletely punctured, intervals nearly flat, the third with four, the fifth with two large but not deep punctures, margin of elytra æneous-green. Body beneath black, tibiæ brownish, femora rufous. Length .35 inch; 9 mm.

One specimen from Hudson's Bay Territory, presented by Mr. H. Ulke, to whom it is dedicated in acknowledgment of many favors.

The following is unknown.

P. californica, Motsch. Ins. Siber. p. 93.

It may possibly be the one above described, but the remarks of M. Motschulsky are so vague that I am unable to satisfy myself, especially when the remote habitat of the two species is taken into consideration.

On the species of OODES and allied genera of the United States.

BY GEO. H. HORN, M. D.

The description of our species of the genera allied to *Oodes* are so widely scattered as to make reference to them in many instances difficult, while the descriptions of Chaudoir are inaccessible except to those having access to the large scientific libraries, and at the suggestion of several correspondents, this and the two preceding papers have been prepared.

Four genera are recognised in the Classification of Coleoptera of North America by Dr. Leconte, two having four dilated joints to the male anterior tarsus, while two have but three.

Four joints of anterior tarsus ♂ dilated.
- All the tarsi pubescent beneath ..... **Lachnocrepis.**
- Posterior tarsi not pubescent beneath ..... **Anatrichis.**

Three joints of anterior tarsus ♂ dilated.
- Posterior tarsi not pubescent beneath.
  - Antennæ slender, filiform ..... **Oodes.**
  - Antennæ stout, compressed ..... **Evolenes.**

LACHNOCREPIS, Lec.

L. parallela, Say (*Oodes?*) Trans. Am. Phil. Soc. iv, 420. Lec. Trans. Am. Phil. Soc. x, 391.

This species is elongate, parallel, and very feebly convex. The sides of the thorax are distinctly rounded in at the base, so that a distinct angle is formed between the sides of thorax and elytra. The elytra are finely seven-striate, the striæ distantly punctulate, intervals flat, and when seen under high power, finely alutaceous, the third having near the apex a single small puncture. Color entirely black, with no metallic lustre. Length .42 inch; 10.5 mm.

Occurs over a wide region; Pennsylvania, Georgia and Missouri, but is by no means abundant.

ANATRICHIS, Lec.

A. minuta, Dej. (*Oodes*) Species v, 677; Lec. Trans. Am. Phil. Soc. x, 391.

Form oval, broader behind. Thorax with distinct median and short longitudinal basal impressions. Elytra rather deeply striate, striæ serrately punctured, intervals flat. The entire surface of the body is rather densely punctulate. The middle tibiæ of the male have below the middle an oblique emargination. Color black, shining. Length .20—.24 inch; 5—6 mm.

Occurs in Louisiana, Texas, and Missouri.

OODES, Bon.

Our species, although more numerous than those of all the other genera taken together, are at present but eight in number, and have been divided into three genera by Chaudoir, (Bull. Mosc. 1857, iii, pp. 20—21), which may here serve as a basis for their illustration in tabular form.

Ligula free at apex.
- First joint of anterior tarsus ♂ entirely spongy beneath; elytra with seven striæ equally distinct ..... (OODES, Chaud.)
  - Thorax gradually broader from base to apex ..... **amaroides.**
  - Thorax slightly narrowed at base ..... { **fluvialis.** / **americanus.**

First joint of anterior tarsus, ♂ spongy only at apex; seventh elytral striæ either entirely obliterated or replaced by fine distant punctures. (STENOUS, Chaud.)

Thorax gradually broader from base to apex, sides not sinuate behind.

Elytral striæ faint and with punctures in theirentire length; tibiæ pale testaceous ..... cupræus.

Elytral striæ deeper, impunctured; legs entirely piceous ..... Lecontei.

Thorax with sides distinctly sinuate behind; elytral striæ distinct, punctured only at base..... elegans.

Ligula and paraglossæ more or less connate; first joint of anterior tarsus ♂, spongy only at apex, seventh elytral stria either obliterated or replaced by distant fine punctures.....(CROSSOCERIS, Chaud.)

Striæ impunctured, seventh wanting..... quatuordecimstriatus.

Striæ punctured, seventh replaced by a row of indistinct punctures.. texanus.

O. amaroides, Dej. Sp. v, 664.

This species is the smallest of the group to which it belongs, and recalls in its general aspect the species of *Amara* allied to *impunctifollis*. The sides of the thorax are rounded and gradually broader to the basal angle and not as in the two succeeding species narrower at base than at a short distance in front. The median and basal impressions are so faint that they may be called obsolete. The elytra have feebly rounded sides, are sub-parallel and very obtuse at apex. The striæ are moderately distinct, finely punctured their entire length, but less distinctly at apex, the seventh being fully as distinct as the two preceding striæ. The intervals are flat, that between the second and third striæ with two distinct punctures. The meso- and metasternal side, pieces are coarsely punctured, the sides of the abdomen rugous. The legs are piceous-black. Length .30—.36 inch; 7.5—9 mm.

Occurs from Pennsylvania to Texas, and westward to Kansas. Not abundant.

O. americanus, Dej. Spec. II, 377.—Black shining. Thorax gradually broader from apex to base, slightly narrower at base than immediately in front, sides rounded, disc feebly convex, and with the median impression distinct but not deep. Elytra sub-parallel, very obtuse at apex, seven-striate, striæ moderately deep, distinctly and closely punctured, intervals feebly convex and with two punctures as in the preceding species. Meso-and metasternal side pieces coarsely punctured: sides of abdomen punctured and finely wrinkled toward the hind margins of the segments. Length .50 inch; 12.5 mm.

Occurs from Pennsylvania to Georgia, but not common.

O. fluvialis, Lec. New Species, p. 13.

Allied to the preceding species, but narrower and more convex. The sides of thorax are less rounded in at base, the median line more distinct and the elytra proportionally longer. The striæ of the elytra are less deep, are very finely and distantly punctured. Intervals flat,

and with two punctures as in *amaroides*. Body beneath sculptured as in the preceding species. Length .50 inch; 12.5 mm.

Rather abundant at Rock Island, Illinois.

O. cupræus, Chaud. Bull. Mosc. 1843, iv, 761; (*Stenous*) Chaud. loc. cit. 1857, iii, 30; *leucodactylus*, Férte, Ann. Ent. Soc. France, 1851, 273.—Form elongate. Color æneous-bronze, disc of elytra faintly cupreous, margin green, shining. Thorax as broad at base as base of elytra, hind angles rectangular. Elytral striæ very faint, and with punctures distantly placed in their entire length, becoming less distinct toward the apex, seventh stria entirely obliterated. Intervals flat the third with two punctures behind the middle. Body beneath piceous, metasternal side pieces with very large impressed punctures. Femora piceous, tibiæ and tarsi pale yellowish. Length .40 inch; 10 mm.

Occurs from Pennsylvania to Louisiana and Missouri.

O. Lecontei, Chaud. (*Stenous*) Bull. Mosc. 1857, iii, 41; *quatuordecimstriatus* ‡ Lec. Ann. Lyc. iv, 331.

Less elongate than the preceding species. Color æneous-bronze, less shining. Thorax with sides slightly more rounded, hind angles rectangular but not well defined at tip. Striæ of the elytra very distinct, deeper than either *cupræus* or *elegans*, and entirely impunctured, the seventh obliterated; intervals flat, the third with two faint punctures as in *cupræus*. Body beneath as in *cupræus*. Legs entirely piceous. Length .40 inch; 10 mm.

The characters thus summarily given will serve to distinguish it from *cupræus* or *elegans*. As in the former species the thorax is as broad at base as the base of the elytra, and both have the first tarsal joint of male shorter and less distinctly pedunculate than the following species.

Occurs in Louisiana.

O. elegans, Lec. Ann. Lyc. v, p. 180,—Form elongate. Color cupreous-metallic, with broad margin of green. Thorax longer than the width at base, sides rounded, sinuate behind, narrower at base than at middle, hind angles rectangular. Elytra broader at base than base of thorax, striæ moderately deep, punctured faintly only at base, seventh totally obliterated, intervals flat, distinctly alutaceous, and with two punctures, as in *cupræus*, placed near the stria. Body beneath and legs as in *cupræus*. Length .40—.42 inch; 10—10.5 mm.

Occurs in Arizona along the banks of Gila River.

O. quatuordecimstriatus, Chaud. Bull. Mosc. 1843, ii, 759; *picipes* Lec. Proc. Acad. ii, 52; Ann. Lyc. iv, 331; *stenocephala*, Laporte (*Crossocrepis*) Ann. Ent. Soc. France, 1854, 271.—Color black, with distinct æneous-tinge. Thorax with rounded sides, gradually broader from apex to base, and as broad at base as the elytra. Elytra moderately deeply striate, striæ impunctured, the seventh totally obliterated. Intervals very feebly convex, the third with two punctures near the second stria. Body beneath and legs, piceous black, side pieces of metasternum with coarse impressed punctures. Length .46 inch; 11.5 mm.

Occurs in Louisiana and Texas. One specimen from the latter region has the striæ less deep and the surface of body with scarcely any metallic tinge.

The species of the sub-genus *Crossocrepis* resemble more nearly the true *Oodes*.

O. texanus, Lec. New Species, p. 13.

Resembles the preceding species, but is more elongate. Elytra with six distinct striæ, punctured in their entire length, seventh stria replaced by distant indistinct punctures. The characters are otherwise as in the preceding species. Length .45 inch; 11.5 mm.

Occurs in Texas.

EVOLENES, Lec.

This genus is closely allied *Oodes*, but differs in the shorter and stouter antennæ. The mandibles above are longitudinally excavated near the tip, and with an acute carina on the upper edge, extending from the tip backwards, as described by Chaudoir, in the genus, *Hoplolenus*. The ligula is rounded and slightly broader at tip and carinate along its middle. The males have the anterior tarsi as in *Oodes*, the first joint being pedunculate.

Two species are known.

B. impressa, Lec. Trans. Am. Phil. Soc. 1853, 392.—Elliptical, black, shining, thorax piceo-rufous. Head smooth. Thorax with rounded sides, gradually broader behind, basal angles rectangular, median groove distinct, and on each side a lateral, broad, shallow groove extending from within a point slightly in front of the middle, inwards and backwards to the middle of the base of each elytron. Elytra as broad at base as thorax, very faintly striate, striæ with fine punctures extending their entire length, the sixth and seventh less distinct; intervals flat and without dorsal punctures. Meso- and metasternum coarsely punctured, sides of abdomen wrinkled and more finely punctured. Body beneath black, legs piceous. Length .31 inch; 8 mm.

A single specimen from New Orleans.

E. exarata, Dej. *Oodes* Spec. v, 678; Lec. (*Evolenes*) Trans. Am. Phil. Soc. 1853, 392.—Elongate-elliptical, piceo-rufous, shining. Thorax similar in form to the preceding, and with distinct median line only. Elytra rather deeply striate, striæ crenately punctured, the seventh as distinct as the others. Intervals of disc nearly flat, those of the sides more convex, with no dorsal punctures. Color beneath as above, sides of meso- and metasterna and abdomen coarsely punctured. Length .23 inch; 6 mm.

From Georgia and Alabama. Has the appearance of *Amara musculis*, Say, at first sight.

Description of the species of APHODIUS and DIALYTES of the United States.

BY GEO. H. HORN, M. D.

The following essay presents to the student a list of all the species of *Aphodius* known from North America, north of Mexico, and contains the results of many years careful collection of specimens from every region of our country by personal labor or through the kindness of many correspondents who have all promptly responded to the request for the loan and gift of specimens. The basis of the work was found in the admirable collection of Dr. Leconte, and around this all new species have been arranged. Several types of Alaskan species have been of much value in determining their correct positions as well as those of allied forms unknown to us in nature.

The species have been arranged in groups for the most part equivalent to those of Erichson (Insecten Deutschlands) while several new ones have been indicated for our West Coast species.

The genus *Dialytes* Harold, (Coleopterologische, Hefte V, 1869, p. 101) differs from *Aphodius* in the structure of the anterior tibiæ on which the two upper teeth are obsolete, the third at the angle and acute, while the fourth is anterior and projects forward over the insertion of the tarsus. The head is strongly deflexed, the front not carinate nor tuberculate. Eyes partially hidden.

A fuller comparison of the genera will be made when sufficient time shall have elapsed for the completion of the remaining species and genera of the tribe.

APHODIUS, Illig.

Our species of *Aphodius* have become quite numerous in collections but present various characters by which they may be divided into groups, each containing but small series of species, and the study is therefore rendered comparatively easy. We may divide the genus primarily into two sections;

Scutellum elongate, equaling ¼ or one-fifth the length of the elytra...*Section I.*
Scutellum short, as broad or broader than long, never exceeding in length ⅛ or one-tenth the length of the elytra..... *Section II.*

Section I is composed entirely of large species, in our fauna, although not containing all our large speies. It may be again sub-divided as follows.

Group A.—Body very convex, elytra not truncate at apex; head tuberculate; anterior femora not fimbriate: anterior tibiæ above the upper tooth entire, not serrate; anterior spur of middle tibiæ slender, conspicuous; middle and hind tarsi with first joint at least as long as the three following; apex of hind tibiæ fringed with short equal spinules.

This group corresponds with *Trachestus*, Muls., and contains but one species introduced into the Canadian fauna from Europe.

A. fossor, Linn. (*Scarabaeus*) Fauna Succ. p. 134.

Oblong, convex, black, shining; elytra finely punctate-striate; front tritubercnlate.

Male.—Middle frontal tubercle prolonged into a short horn; thorax slightly impressed in front; anterior tibiæ with an elongate spur obtuse at tip. Length ♂ .36—.48 inch; 9—12 mm.

Female.—Frontal tubercles small, equal; thorax not impressed; anterior tibiæ with a more slender, acute spur.

This species is said to vary in having reddish elytra.

Specimens have been received from Canada and the New England States.

As this species is so well known abroad and may be readily recognised by student of our fauna by its large size and peculiar characters, I have contented myself with copying the short but characteristic description of Erichson.

Group B.—Form elongate oval, sub-depressed: head not tuberculate; anterior femora (especially in ♂) fimbriate with moderately long hairs: outer edge of anterior tibiæ usually serrate above the upper tooth; anterior spur of middle tibiæ ♂ short robust, not conspicuous, that of female longer, more slender and acute; middle and hind tarsi with the first joint elongate, that of the hind tarsus of male deformed; apex of hind tibiæ frimbriate with unequal spinules.

The deformity of the first hind tarsal joint of the male is a peculiarity not known to me in any species outside of this group. The joint may be described as V-shaped, attached to the tibiæ by the longer and broader branch, the other being shorter, more slender and acute at tip. The inner or anterior spur of the middle tibia is short, rather robust and partially concealed, being scarcely longer than a fourth of the outer spur. The spur of the anterior tibiæ of male is very broadly spatulate and varies somewhat in accordance with the species, that of the female being much more slender and sub-acute at tip. In all the species the front is broadly rounded, slightly emarginate at middle.

This Section is probably equivalent to *Colobopterus*, Muls., but I can find no mention of the peculiar sexual characters in an specific description.

The following table will enable our species to be recognised:

Pygidium entirely covered by the elytra in both sexes.
  Base prothorax with distinct entire marginal line.
    Thorax with moderately rounded sides, not broader in front than the elytra.....**pinguis.**
    Thorax with strongly rounded sides, broader in front than elytra.....**validus**, n. sp.
  Base of prothorax with marginal line interrupted at middle, sometimes entirely wanting.
    Striæ of elytra deep, insterpaces convex.....**hamatus.**
    Striæ of elytra faint, interspaces flat.
      Frontal margin broadly rounded, feebly emarginate at middle.....**hyperboreus.**
      Frontal margin feebly emarginate at middle and sinuate on each side near the angles.....**torpidus**, n. sp.
Pygidium exposed, elytra sub-truncate at tip in both sexes.
  Thorax with basal marginal line distinct at sides; angles of genæ obtuse, not prominent.....**occidentalis**, n. sp.

A. pinguis, Hald., Journ. Acad. Ser. ii, vol. 1, 1848, p. 103.

Oblong black, shining, moderately convex. Front broadly rounded, feebly truncate at middle. Head finely punctured, coarser and more dense on front and toward the sides, finer and more sparsely placed on the vertex. Thorax broader than long, feebly narrower behind and not broader than the elytra; sides and base with distinct marginal line; sides (when viewed from above) feebly rounded; disc shining, moderately convex and with large punctures very distantly placed at the sides and toward the base, between which are fine punctures evenly scattered over the entire surface; elytra about one-half longer than thorax, slightly depressed, sides moderately rounded with moderately impressed striæ, not coarsely nor closely punctured, interstices flat, very finely and sparsely punctured. Beneath coarsely and distantly punctured. Legs brownish ferruginous, antennæ paler. Length .30 inch; 7.5 mm.

Male.—Spur of anterior tibiæ broadly spatulate, inner spur of middle tibiæ short robust and unconspicuous. First joint of hind tarsus V-shaped.

Female.—Spur of anterior tibiæ acute but strong, inner spur of middle tibiæ slender, at least half the length of the outer. Hind tarsi normal.

In both sexes the anterior tibiæ have the outer edge above the upper tooth simple, not serrate.

Occurs in the Lake Superior region.

A. validus, n. sp.

Resembles *pinguis* but differs in the following characters:—Sides of thorax very broadly rounded, and broader than the elytra. Elytra comparatively shorter than in *pinguis* and scarcely one fourth longer.

This species has a much more robust facies than *pinguis*. The thorax is more convex and shining and with fewer large punctures at the sides and scarcely any at the base. The legs are more robust and the first hind tarsal joint of male is more strongly developed than in any of the species of the group. The color of the upper surface is

black, shining, with the elytra very slightly brownish. Sexual characters ♂ as in *pinguis*, female unknown. Length .32 inch; 8 mm.

Specimens were collected by Mr. Jas. Lockhart at Abittibi House, Hudson's Bay Territory, and kindly sent me by Mr. Townend Glover, of Washington.

A. hamatus, Say, Long's Exped. ii, 277; Am. Entomol. Edit. Lec. 1, 183; *angularis*, Lec. Agass. Lake Super. p. 225; *sagittarius*, Harold, Ann. Ent. Soc. France, 1860, 615; Berl. Zeitschr. 1862, 163.

The description of Say is by no means characteristic and may with equal propriety be referred to several of the species of the group. Harold (Catalogus p. 1049,) has admitted the synonymy of Leconte's species with Say's (suggested as probable by Leconte himself List. p 35) and with this before me I have no doubt whatever of the identity of *sagittarius* and *angularis*. Harold's description is exactly equivalent to the typical specimens of Leconte.

This species may be distinguished from all of those now known by the very (for this group) convex elytral interspaces and the rather closely and often crenately punctured striæ. The thorax is sub-quadrate, sides very feebly rounded, basal edge distinctly margined at the sides. The coarse punctures are more numerous in this species and more densely placed towards the sides and base and with no fine punctures. The head appears unusually small, by the genæ being very little prominent and obtusely rounded. The anterior tibiæ have the outer edge above the upper tooth simple and not at all serrate. Length .27—.30 inch; 7—7.5 mm; (3—4⅓ lines, Harold.)

Lake Superior, Illinois, Dacotah and Oregon? (Harold.)

A. hyperboreus, Lec. Agass. Lake Sup. p. 225; *omissus*, Lec. loc. cit. *concavus* ‡Hald. Journ. Acad. Ser. ii, vol. i, p. 103.

Similar in form to *pinguis*. Color black, shining, elytra occasionally entirely or with the base and sides only brownish. Head smooth, with but few coarse punctures in front. Thorax with distant coarse punctures over the entire surface, very sparse on the disc, more abundant toward the sides and base, and with very few of the finer punctures as described in *pinguis;* basal edge with scarcely any trace of marginal line. Elytra as in *pinguis;* striæ faint, scarcely punctured, interstices flat, usually impunctured. Color beneath as in *pinguis*. Anterior tibiæ with outer edge serrate above upper tooth. Sexual characters as in *pinguis*, but with the first joint of hind tarsus of male less developed. Length .24—.32 inch; 6—8 mm.

In the series before me I am unable to separate the species de-

scribed by Leconte as *omissus*. The interstrial spaces of the elytra are usually entirely without punctures, in some however the punctures are more or less distinct, and the separation of the latter species on this character above appears not to be warranted.

Specimens occur from Lake Superior to Oregon. Those from the latter region and Dacota are those in which the interspaces are punctulate.

A. torpidus, n. sp.—Elongate oval, black, shining. Head finely and sparsely punctured, front broadly rounded, broadly emarginate at middle, and slightly but very distinctly sinuate near the genæ. Thorax broader than long, convex, with coarse punctures at the sides and base, very distantly placed, and with very few finer punctures near the sides; sides moderately rounded, gradually narrower from base to apex (when viewed from above), distinctly margined, base margined at the sides. Elytra as in *pinguis* with the striæ rather broad, moderately deeply impressed; are coarsely but distantly punctured, interspaces flat, scarcely punctulate. Beneath black, coarsely not densely punctured, legs, brownish, antennæ pale, club darker. Anterior tibiæ distinctly serrate above the upper tooth. Sexual characters as in *pinguis*. Length .36—.40 inch; 9—10 mm.

This species may be readily distinguished by the very distinct sinuation of the sides of the front near the genæ, and by the very distinct marginal line at the sides of the base of the thorax. The elytra are not uniformily colored, but have the entire second interspace, the base of the third and the entire apex of the elytra, pale yellowish-testaceous, the entire sutural or first interspace black. The specimens are all colored alike, that I have seen.

Occurs at Salt Lake, Fort Simpson and Oregon.

A. occidentalis, n. sp.—Oblong, black, shining. Head smooth, with very few and fine punctures anteriorly; genæ very obtuse, not prominent. Thorax broader than long, sides moderately rounded and distinctly margined, base feebly bisinuate and margined on each side of the middle; disc convex, smooth and with few coarse punctures toward the side and base, and no fine punctures Elytra robust, sub-truncate at apex, one-fourth longer than the thorax; uniformly fuscous, but more commonly yellowish-testaceous, with the middle portion of each fuscous; surface distinctly striate, striæ distantly punctured, becoming obsolete toward apex, interstices flat, almost entirely impunctured. Beneath black, coarsely not densely punctured, and sparsely pubescent. Legs ferruginous-brown. Antennæ rufous, club dark. Pygidium exposed, moderately convex, coarsely and rather densely punctured. Anterior tibiæ with outer edge above upper tooth usually simple, rather sub-crenulate. Sexual characters as in *hyperboreus*. Length .32 inch; 8 mm.

Easily distinguished from all our species by the sub-truncate elytra the exposed pygidium, the almost entirely impunctured head, with the sides of the genæ very slightly prominent. The color of the elytra varies from a uniform brownish to those in which the sutural, apical

and basal margins are yellowish-testaceous, the remaining portion brownish, but with lines indicating the striæ paler. Occasionally the pygidium is not prominent, in this case the sub-truncation of the elytra is rendered still more evident.

Occurs from Montana westward to Oregon.

Section II contains the bulk of our species, usually of moderate or small size, several of them however large, rivaling those of the preceding group in length, although never very robust, but few of them are notably convex, many depressed. Many curious sexual characters have been noticed, and will be adverted to in their proper places. The scutellum is small, triangular, never longer than one-eighth or one-tenth of the elytra.

As the species are numerous, they may, for convenience, be divided, in accordance with the suggestions of Erichson, into groups.

Apex of hind tibiæ fringed with short equal spinules.
  Thorax distinctly margined at base.
    Head more or less tuberculate.
      Mesosternum not carinate.
        Clypeus sub-quadridentate.....Group C.
        Clypeus sub-emarginate.
          Sides of thorax, near hind angles, distinctly sinuate..... ...Group D.
          Sides of thorax rounded, not sinuate behind.....Group E.
      Mesosternum distinctly but slightly carinate.....Group F.
    Head not tuberculate; clypeus emarginate and bidenticulate..... Group G.
  Thorax not margined at base; head tuberculate; sides of scutellum emarginate.....Group H.

Apex of hind tibiæ fringed with unequal spinules.
  Head distinctly tuberculate.
    Elytra yellow, with black spots; base of thorax margined; hind tibiæ stout.....Group I.
  Head not tuberculate.
    Thorax not sinuate at sides near base.
      Elytra strigose; opaque black; base of thorax margined; hind tibiæ slender .....Group K.
      Elytra glabrous, shining; base of thorax more or less margined.....Group L.
      Elytra pubescent, sub-opaque..... ..Group M.
    Thorax distinctly sinuate on the sides near hind angles.
      Clypeus denticulate; elytra oblong.....Group N.
      Clypeus emarginate; elytra oval.....Group O.

In using the above table the student must, at all times, be careful that the specimens are perfect, that is, that the spinules at the tips of the tibiæ are not worn or accidentally reduced to an equal size, or that the long hairs fringing the sides of the tibiæ do not, by crossing the

field of vision, deceive into the belief that the spinules are unequal. In old specimens of those species in which the clypeus is denticulate, the teeth are apt to be worn down as also the spurs of the tibiæ, and the large teeth of the anterior tibiæ. In those that are pubescent, various accidental causes may remove the hairs, and experience alone here, as well as in the previously noted accidents, must be our guide.

Group C contains but one species. Form robust, clypeus rather deeply emarginate at middle, bounded by a tooth on each side and with another smaller, more acute tooth at one-third the distance toward the genæ. Front distinctly trituberculate along the line of the frontal suture. Prothorax with base distinctly margined. Scutellum small, elongate oval. Posterior tibial apical spinules short, equal. First joint of hind tarsi shorter than the upper spur, equalling the two following. Anterior tibiæ above the upper tooth strongly serrate.

A. denticulatus, Hald. Journ. Acad. Ser. II, vol. i, p. 104.—Oblong, piceous, shining. Head densely and coarsely punctured. Thorax convex, with sparsely placed coarse punctures, denser however at the sides; anterior angles paler. Elytra broader behind the middle, very convex and obtuse behind, deeply striate, striæ coarsely and closely punctured, interspaces feebly convex, with very distant fine punctures, sutural interspace brownish-ferruginous. Body beneath ferruginous, middle and hind femora and metasternum piceous. No sexual characters have been noticed. Length .30 inch; 7.5 mm.

The entire margin of the body is fimbriate with yellowish hairs, also the under surface and legs, the hairs of the hind tibiæ are especially long, giving the species the air of an *Egialia*.

Occurs along the eastern base of the Rocky Mountains, from Bitter Root Valley to New Mexico.

Group D contains one species introduced from Europe, and now gradually spreading over our country. Head distinctly tuberculate, front broadly rounded, feebly emarginate at middle and slightly sinuate in front of the genæ, which are obtusely rounded and not prominent. Thorax margined at base, sides sinuate near hind angle. First joint of hind tarsi shorter than upper spur and slightly longer than the two following joints. Outer edge of anterior tibiæ with several rather coarse punctures above the upper large tooth.

A. fimetarius, Linn. Faun. Suec. 134; *nodifrons,* Randall, Bost. Journ. ii, 20.—Head and thorax black, the latter frequently with anterior angles rufous Elytra pale ferruginous. Length .34 inch; 8.5 mm.

As this is a well known European species, introduced along the seaboard and Canada, a detailed description has been omitted, also the

synonymy. Full descriptions may be found by Erichson, Insecten Deutschlands, iii, 815; Harold, Berl. Zeitscher. 1868, 338.

Group E comprises species of variable form, color and size. The head is distinctly tuberculate, clypeus sometimes hemihexagonal or broadly rounded, more or less deeply emarginate. Thorax distinctly margined at base, sides rounded and not sinuate toward the apex.

Our species may be known by the following list.

Head hemihexagonal, clypeus rather deeply emarginate, with the angles on each side of the emargination, more or less prominent, never broadly rounded..... 1.

Head usually broadly rounded, clypeus feebly emarginate and broadly rounded on each side..... 2.

1.—Thorax black, elytra dark red; .29 inch.—Unalaschka.....**aleutus.**

Thorax and elytra similar in color, black or piceous.

Form very robust; elytra scarcely one-fifth longer than wide; clypeal teeth prominent; .18—.20 inch;—Georgia and Florida.....**crassulus.**

Form more elongate; clypeal teeth less prominent:

Mesosternum strigose, not punctured; .30 inch.—Alaska.**ursinus.**

Mesosternum punctured; .18—.22 inch.—East of Rocky Mountains.....**ruricola.**

2.—Elytra rufo-testaceous, clouded; mesosternum strigose; .22 inch.—Alaska.....**congregatus.**

Elytra dark red; .20 inch.—Middle States.....**fœtidus.**

Elytra piceous-black, anterior angles of thorax and apices of elytra rufous; .29 inch.—Alaska.....**arcticus.**

Elytra black, interstices, especially at apex, finely alutaceous; .22 inch.—Alaska.....**pectoralis.**

Of the above species *arcticus* and *aleutus* are unknown to me in nature. These species have the mesosternum strigose, *congregatus ursinus* and *pectoralis*, while in the others it is rather coarsely punctured, as far as I have had the opportunity of examining. The prominence of the angles on each side of the clypeal emargination is subject to vary, and they may become rounded. In this case, the evidences of age are always apparent, and the acuteness of the edge is always obliterated as well as the prominence of the angles destroyed.

A. aleutus, Esch. Entomograph. i, 1822, 27; Harold, Berl. Zeitschr. 1863, 372.—"Oblongo-ovate, moderately convex, shining black, anterior angles of thorax and the elytra dark reddish. Head punctured, in front slightly rugulose. Front trituberculate, clypeus emarginate at middle, genæ moderately prominent. Thorax with large and small punctures, sparsely punctured at middle, more densely at the sides, base on each side sub-sinuate. Elytra sub-crenately striate, interstices flat, distantly sub-seriately punctured. Palpi piceous, antennæ rufous, club infuscated. Body beneath piceous-black, feet rufo-piceous. Length 3½ lines."

Unalaschka. Entirely unknown to me.

A. crassulus, n. sp.—Robust, obovate, black, shining. Head very coarsely punctured in front, less densely at middle, front hemihexagonal: clypeus emarginate in front and distinctly denticulate on each side. Thorax very convex, broader than long, sides moderately rounded, base distinctly margined; surface smooth, evenly but sparsely and not coarsely punctured. Elytra robust, very convex, broader behind and obtuse at apex, scarcely one-fifth longer than broad, distinctly striate, striæ rather distantly punctured; interstices flat, more convex toward apex, very sparsely and finely punctured. Body beneath black, legs rufo-piceous, antennæ rufous, club darker. Length .18—.20 inch; 4.5—5 mm.

Occurs in Georgia and Florida. Easily known from all our species by its very robust form and by the clypeal teeth being more prominent.

I preserve the name under which it is found in the cabinet of Dr. Leconte. I cannot find that it has ever been either described or mentioned in catalogue.

A. ursinus, Motsch. Bull. Mosc. 1845, iv, 365, pl. 6, fig. 60. Mann. Bull. Mosc. 1853, iii, 218. Harold. Berl. Zeitschr. 1863, 386.—Elongate, convex, black, shining. Head sub-scabrous in front, punctured behind, distinctly trituberculate. Front hemihexagonal. Clypeus emarginate at middle, and on each side obtusely prominent. Thorax moderately convex, unequally punctured with coarse and fine punctures. Elytra moderately deeply striate, interstices feebly convex and very finely and sparsely punctured. Body beneath black, legs rufo-piceous, antennæ dark ferruginous, club greyish. Length .28 inch.

This species recalls the general for of *denticulatus*. Types are in Dr. Leconte's cabinet from Mannerheim and Motschulsky.

Occurs in Alaska also Kamtschatka.

A. ruricola, Mels. Proc. Acad. ii, p. 136. Harold, Berl. Ziltsch. 1863, 373, *curtus*, Hald. Journ. Acad. Ser. II, vol. i, p. 105, *aurelianus*, Harold, Berl. Zeitschr. 1863, 375.

A very widely diffused species, occuring over our entire territory from Canada to Texas, and westward to the eastern base of the Rocky Mountains, and presenting slight varieties when specimens from remote regions are compared singly, but vanishing when a series embracing our whole country is examined. The following description will suffice to render it recognisable among our other species.

Oblong, convex, shining, rufo-piceous or piceous, never entirely black, usually with the sides and always with the apices of elytra paler than the disc. Front hemihexagonal, clypeus distinctly emarginate at middle, on each side of which the edge is obtusely prominent and not broadly rounded; surface in front rugosely punctured, behind more finely punctulate and distinctly but slightly trituberculate. Thorax punctured, finely on the disc more coarsely and densely toward the sides. Elytra moderately deeply striate, and with coarse rather approximate punctures: interstices moderately convex, smooth,

impunctured. Body beneath variable in color, as the upper surface, but paler, legs rufous. Length .18—.22 inch; 4.5—5.5 mm.

I have united with *ruricola* the species described by Haldeman and Harold, for the reason that I have been unable to detect any character that is of sufficient moment to define their difference. *A. aurelianus*, Harold, is an exact reproduction of Haldeman's *curtus*, and differs only from the types found in Pennsylvania in its rather larger size, darker color and (hardly appreciably) less densely punctured head and thorax. To be convinced that these are of no value, it is only necessary to consult a large series, or to place these differences parallel with those which are well known to occur in the still more widely diffused *granarius*.

The females are much more rare than the males, and have the angles on each side of the clypeal emargination more prominent and acute.

A. congregatus, Mann. Bull. Mosc. 1853, iii, 210. Harold, Berl. Zeitshr. 1863, 362.—Oblong, moderately convex, shining, piceous-black, elytra reddish-testaceous, with a broad lateral margin, scutellar space and broad sutural band darker. Head distinctly trituubereulate, anteriorly coarsely punctured and rugose, posteriorly punctured; clypeus feebly emarginate, with the angles on each side broadly rounded and brownish-ferruginous. Thorax moderately convex, smooth, with entire surface punctured with fine and coarse punctures, more densely placed near the sides, lateral margin dark ferruginous. Elytra feebly striate, distinctly punctured; interstices nearly flat, slightly punctulate. Body beneath piceous, mesosternum strigose, legs rufo-testaceus. Length .22 inch; 5.5 mm.

A species easily recognisable by the color of elytra, and sculpture of mesosternum.

Occurs in Russian America. Typical specimens from the hand of Mannerheim are before me.

A. fœtidus, Fab. Ent. Syst. i, 40. Harold, Berl. Zeitchr. 1863, 364. *tenellus*, Say, Journ. Acad. Ser. I, vol. iii, p. 213.

An introduced species, and by no means abundant in this county. The characters given in the table will suffice to render it known when found. The mesosternum is punctured. Length .20 inch; 5 mm.

Occurs in the Middle States.

A. arcticus. Harold, Berl. Zeit. 1863, 361.—"Convex, elongate oval, piceous-black, shining; anterior angles of thorax and apices of elytra rufous. Head narrowed in front, punctured, and toward the margins rugulose, front trituberculate, clypeus emarginate at middle, gene moderately prominent. Thorax with sides rounded, finely but remotely punctured, disc almost smooth, at sides with coarser punctures intermixed, base on each side sinuate. Elytra behind the middle slightly dilated, punctato-striate, interstices flat, subseri-

ately punctulate. Palpi and antennæ rufo-piceous, club cinereous. Body beneath piceous, legs rufo-piceous." Length 3½ lines (.29 inch; 7.5 mm.)

Occurs in Russian America, Peninsula Kenai.

Easily known by the above characters. Unknown to me in nature.

A. pectoralis, Lec. Pacif. R. R. Rep. 47 parallel, App. i, p. 41.—Oblong, black, convex, shining. Head coarsely punctured and slightly rugulose in front, vertex smoother and more sparsely punctured; front distinctly trituberculate; clypeus broadly rounded, feebly emarginate at middle, genæ obtusely rounded, feebly prominent. Thorax strongly convex, sparsely and coarsely punctured; base distinctly margined. Elytra striate, striæ not coarsely but approximately punctured; interstices flat, very finely alutaceous, more coarsely toward apex, which is sub-opaque. Beneath black, legs piceous-black, antennæ rufous, club darker. Length .20 inch; 5 mm.

Type from San Francisco, others from Russian America.

The color of this species is very black, and may easily be recognised by the characters given in the table. The mesosternum is strigose. The elytral interspaces, especially toward the apex, exhibit decided traces of an alutaceous sculpture, which renders the apices of the elytra decidedly opaque. The specimens from Russian America have the elytral striæ scarcely as well defined, and the interstices are apparently flatter. These slight differences hardly seem to warrant the separation of them as distinct species.

Group F contains but two species, differing from those of the preceding group by the mesosternum being distinctly carinate between the middle coxæ.

A. granarius, Linn. Syst. Nat. i, 2. p. 547. Harold, Berl. Zeitschr. 1863, 347. *quadrituberculatus*, Fab. Syst. El. 75. *metallicus*, Hald. Journ. Acad. Ser. ii, vol. i, p. 105. *spretus*, Hald. id. p. 106.

This species is cosmopolitan, occurring in every quarter of the globe and very abundant wherever it occurs. Specimens have lately been received from various parts of maritime California. Length .16—.25 inch; 4—6 mm.

So much space has already been given to the description of this species that it is not deemed advisable to add anything further, the student is referred to that of Harold above cited.

A. vittatus, Say, Journ. Acad. v, 191. Harold, Berl. Zeitchr. 1863, 355.—Black, shining, moderately elongate and sub-cylindrical; elytra with a basal and apical rufous spot, often confluent into a broad stripe. Head densely and finely punctured, front distinctly trituberculate, clypeus feebly emarginate. Thorax punctulate, more densely toward the sides. Length .14—20 inch; 3.5—5 mm.

This species is readily known by the few characters above given.

It occurs rather abundantly from the Middle States to Kansas, those from the western region being smaller.

Group G contains a single species, differing from all our species in appearance, in having the thorax notably narrower behind and the hind angles broadly rounded. The elytra are oval, narrower at base than at middle, at the bases of the thorax and elytra apparently more distant than in any other of our species. The head is moderately convex, not tuberculate, clypeus rather deeply emarginate and on each side elevated into a very distinct acute tooth. The base of thorax is distinctly margined, the mesosternum feebly carinate, and the anterior tibiæ not serrate above the upper tooth. First joint of hind tarsi slightly longer than the second and third together. No remarkable sexual characters have been noticed.

A. nevadensis, n. sp.—Moderately elongate, black, shining. Head moderately convex, not tuberculate, rugose, especially in front and at sides, broadly rounded in front, genæ moderately prominent; clypeus emarginate and on each side distinctly denticulate. Thorax rounded and narrower behind, hind angles broadly rounded, base broadly rounded and distinctly margined; surface finely not densely punctured, with coarser punctures intermixed, more numerous at the sides. Elytra oval, humeri rounded, surfaced istinctly striate, striæ feebly punctured at base, more distinctly toward apex, interstices feebly convex and sparsely punctulate. Body beneath black, mesosternum in front of coxæ coasely punctured or cribrose, between coxæ carinate. Legs rufopiceous, antennæ luteous. Length .22—.30 inch; 5.5—7.5 mm.

This species is readily known by the characters given. The wings are very feebly developed. It varies in color from black to brown. In some the elytral striæ are fainter, the interspaces flatter and impunctured.

Specimens were collected in Nevada by Mr. Gabb; others have been sent by Mr. Henry Edwards, probably from the same region.

Group H contains two small elongate species characterised by the absence of the basal prothoracic line. The genæ are very feebly prominent.

A. lividus, Oliv. Ent. i. 3, p. 86, pl 26, fig. 222. Erichs. Ins. Deutsch. 3, p. 837. —Elongate, pale testaceous; head, disc of prothorax and elytra, and sutural narrow space, brownish. Length .18—.20 inch; 4.5—5 mm.

Introduced from Europe, occurring in our Southern States, as far west as New Mexico.

A. vestiarius, n. sp.—Elongate, piceous-black; margin of head, sides of thorax, sutural and lateral margins of elytra picco-rufous, shining. Head distinctly tuberculate, middle tubercle elevated into a very short horn, surface sparsely punctured at the margins, more densely on the front; clypeus distantly emarginate, genæ not prominent. Thorax broader than long, convex,

apparently narrower in front, coarsely but sparsely punctured, with few finer punctures intermixed; sides moderately rounded, base not margined. Elytra moderately deeply striate, striæ closely punctured at base, scarcely punctured at apex, insterstices moderately convex, sparsely punctulate at apex only. Body beneath piceo-rufous; legs rufous. Mesosternum between the coxæ distinctly carinate, in front strigose. Antennæ testaceous. Length .16 inch; 4 mm.

Easily known from *lividus* by its color, coarsely punctured and more convex thorax.

Specimens collected near St. Augustines, Florida, and presented to me by Mr. Levi Taylor.

Group I contains but few species easily known among the others by the yellow elytra with variously arranged black spots, and by the tubereulate head. All have the thorax distinctly margined along the basal line. The hind tibiæ are rather stout and fringed at apex, with unequal spinules. The hind tarsi have the first joint equal in length to the longer tibial spur. The sexual characters may be found in the more strongly tubereulate head, and more coarsely punctured thorax.

Our species are as follows:

Clypeus distinctly angulate on each side of emargination..... .....**serval.**
Clypeus broadly rounded on each side.
Elytra with lateral black vitta.....**inquinatus.**
Elytra with black spots only, no lateral vitta.
.18—.22 inch; California. Elytra with the inner series of striæ joining the outer series.....**pardalis.**
.28 inch. Canada and Maine. Elytra with the three inner striæ nearly equal, not confluent with the outer three.....**leopardus.**

A. serval, Say, Bost. Journ. i, 1837, p. 177; Am. Ent. Ed. Lec. ii, 651.

A pretty little species easily known by the clypeus being distinctly angulate or broadly denticulate on each side of the emargination. The head is very coarsely punctured, and toward the sides and front rugose, genæ not prominent. Thorax moderately convex, sides feebly rounded, surface coarsely punctured, rather more densely toward the sides, less coarsely and densely in the female. Elytra pale yellowish as in *inquinatus*, with the lateral and apical margins reddish, and with black spots arranged as follows; a small spot at base of fifth interspace, another on the fourth slightly in front of middle and one slightly behind the latter and usually confluent with it on the third interspace, sometimes extending on the second, a sinuous band composed of confluent spots on the second, third, fourth and fifth interspaces about one-fourth from the apex, lateral stripe occupying portions of the seventh, eighth and ninth interspaces, gradually fading into the rufous margin. Body beneath brownish, legs paler. Length .18 inch; 4.5 mm.

The rufous marginal space becomes broader at apex extending about a sixth of the length of the elytra, and usually darker at its an-

terior portion in the second and third interspaces, so that there appear to be two additional black spots behind the sinuous transverse band above mentioned. The frontal margin is rufous, also the anterior angles and frequently the sides of the thorax.

This species is by no means common in collections, two species only are known to me, one from Pennsylvania and another from the Indian Territory, near Fort Cobb, showing at least a wide distribution.

A. inquinatus, Herbst, Füssl. Arch. 1784, V, 2, p. 6, pl. 19, fig. 5. Erichs. Ins. Deutsch. iii, p. 839. *macvlipennis*, Mels. Proc. Acad. ii, p. 137.

This species, like *granarius*, appears to have become almost cosmopolitan, and is abundant over our entire country east of the Rocky Mountains. Much of the synonymy of the European authors has been omitted as unnecessary to the object of the present essay.

From all our species which have the elypeus on each side of the emargination rounded, *inquinatus* may be known by the broad lateral black stripe. The sides and apex are not rufous as in *serval*. The black spots are, a basal spot at base of fifth interspace, one slightly behind this, irregular in outline, occupying portions of the fourth, third and second; behind the middle a sinuous transverse band joining the lateral stripe and extending to the third stria. The head is usually black, the anterior angle of the thorax rufous.

This species is slightly longer than *serval*, and occurs abundantly in almost every portion of our country and Europe.

A. pardalis, Lec. Pacif. R. R. Rep. App. i, p. 41, 1857.—Head black, with rufous front and sides, coarsely punctured and rugose near the margins. Thorax more convex than in *inquinatus*, sides broadly rounded and rufous or rufo-testaceous, surface coarsely but sparsely punctured, with finer punctures between. Elytra somewhat broader behind the middle, more convex than in *inquinatus*, and more obtuse behind, faintly striate, striæ distinctly but coarsely and closely punctured, pale yellowish-testaceous, with black spots arranged as follows; at base of fifth interspace, another slightly behind the scutellum on second and third, another behind this on fourth, and another about the middle on the second and third, a sigmoid transverse patch on the sixth, fifth and fourth, and three lateral elongate spots on the seventh, eighth and seventh again. Body beneath brownish, abdomen, legs and parts of mouth rufo-testaceous. Length .22 inch; 5.5 mm.

The series of spots on the disc of elytra are at times confluent, so that they form nearly a semi-circle on each elytron, the lateral spots frequently join and form an irregular stripe, but is always irregular and indicates its origin in the confluence of smaller spots, while the broad stripe of *inquinatus*, extends along the greater part of two or three interspaces. It may also be known by the sides of the head, in front of the genæ, being slightly sinuous.

Abundant along the Pacific slope from San Francisco to Vancouver.

A. leopardus, n. sp.—Similar in form to *inquinatus*, but larger more robust. Head coarsely not densely punctured, not rugose in front, sides rufous. Thorax moderately convex, surface rather densely and coarsely punctured with finer punctures intermixed, sides feebly rounded and broadly rufous. Elytra slightly broader behind the middle, moderately deeply striate, with punctures not very closely placed, interspaces feebly convex, more distinctly toward the apex, very sparsely punctulate; color yellowish, slightly reddish in more recent specimens, and with black spots, a small spot at base of fifth interval, one slightly in front of middle on the fifth and fourth, usually joining, another slightly behind it on the second and third, a sinuous band at apical fourth on interspaces five, four, three and two, usually extending foward along the second interval, joining the spot in front, usually a small black spot slightly behind the humeral angle on the seventh and eighth intervals. Body beneath piceous, legs and parts of mouth testaceous. Length .28 inch; 7 mm.

Differs from all our species of the group by the greater convexity of the elytral interspaces. The striæ of the inner series extend nearly to apex of elytra, are parallel and not confluent with those of the outer series; the fifth and sixth striæ alone join. This arrangement of the striæ is the rule in Group B, and only rarely occurs in any of the following groups.

Maine and Eastern Canada.

Group K contains but few species easily known by thier surface being entirely opaque. The head and thorax is always densely and rather coarsely punctured and the elytra faintly striate, with interspaces flat, either finely longitudinally wrinkled, or muricately punctured. The thorax is distinctly margined at base. The hind tibiæ with the upper oblique line of spinules almost entirely obliterated. The first joint of the hind tarsi is not as long as the two following together, although equalling the upper spur.

Our species are distinguished as follows.

Clypeus on each side of emargination with an acute tooth.....**lutulentus.**
Clypeus on each side of emargination rounded.
Mesosternum flat.....**stupidus.**
Mesosternum carinate between the coxæ.....**lentus.**

A. lutulentus, Hald. Proc. Acad. i, 1842, p. 304; Journ. Acad. Ser. ii, vol. 1, p. 104.—Clypeus rather deeply emarginate at middle, and on each side an acute prominent tooth, distinctly sinuate in front of the genæ. Head coarsely, densely and very equally punctured, moderately convex and with very faint traces of the three tubercles, so prominent in the preceding group. Thorax moderately convex, sides feebly rounded, surface very densely and coarsely punctured. Elytra elongate oval, moderately convex, feebly striate, striæ with traces of distant punctures; interspaces flat, very finely longitudnally wrinkled and sub-quadrate. And with very minute and fine erect hairs, scarcely to be

seen except when viewed between the lens and a strong light. Body beneath black, shining, legs piceous-black. Mesosternum flat, not carinate. Length .28—.30 inch; 7—7.5 mm.

In all the specimens before me the apices of the elytra are slightly prolonged and each rounded at tip, they are probably all males.

Occurs in the Middle and upper Southern States.

A. stupidus, n. sp.—Oblong, robust, black, sub-opaque. Head coarsely and moderately densely punctured less densely at the sides and anterior margin. Clypeus emarginate at middle and round on each side and with a very faint sinuation in front of genæ. Thorax moderately convex, sides rounded, surface densely punctured but less coarsely and densely than in *lutulentus*, base with entire marginal line. Elytra moderately convex, sides sub-parallel, moderately striate with scarcely any traces at apex, and rugose and muricate becoming smoother toward the apices of the elytra. Body beneath black, shining, legs piceous. Mesosternum not carinate. Length .20—.22 inch; 5—5.5 mm.

In one specimen before me the margin of the elytra near the apex is slightly sinuate (♀ ?) and slightly more prolonged than in two others (♂ ?) in which the margin is entire and the apex more obtuse. This species is less opaque than *lutulentus* and the minute hairs rather more evident and apparently greyish.

The only specimens known are from Georgia.

A. lentus, n. sp.—Elongate oval, slightly depressed, brownish ferruginous, sub-opaque. Head coarsely but sparsely punctured, less densely at the sides, and in front nearly smooth. Clypeus feebly emarginate, rounded on each side and not sinuate in front of genæ. Thorax moderately convex, sides feebly rounded, base distinctly margined, surface rather coarsely and evenly punctured. Elytra elongate oval, moderately deeply striate with scarcely any traces of punctures in the striæ, interspaces flat transversely wrinkled and muricate and with few very minute hairs. Body beneath shining ferruginous. Mesosternum, between the coxæ, distinctly carinate. Length .15 inch; 4 mm.

The elytral striæ of this species are equally deep at base and apex, the inner striæ being long, and extending nearly to apical margin and not confluent with the outer series of striæ. The margin near apex is very faintly sinuate in both specimens before me. It may be possible that the color of this species is due to immaturity, it is however less opaque than either of the preceding and may readily be known by the carinate mesosternum.

Pennsylvania and Georgia; rare.

Group L contains species agreeing in having the elytra entirely glabrous and shining and without any traces of pubescence. They vary much in other characters so that were it deemed advisable, several groups could be constructed as may be seen from the following table, where may be found species with slender and stout hind tibiæ and

some with and without the clypeus angulate on each side of the emargination. Two species only have the mesosternum carinulate.

The following table will serve to distinguish the species.

Anterior tibiæ strongly tridentate.
  Mesosternum distinctly carinulate between the coxæ.
    Clypeus broadly rounded at each side.
      Hind tibiæ stout; striæ of elytra nearly without punctures.....rubeolus.
      Hind tibiæ slender; striæ distinctly punctured.....stercorosus.
    Clypeus bidenticulate.....militaris.
  Mesosternum not carinulate; flat or concave between the coxæ.
    Thorax red or yellowish-testaceous, never black.
      Small species, .16—.22 inch.
        Clypeus distinctly angulate on each side of emargination, color uniform rufous; hind tibiæ stout; striæ serrately punctured; interspaces densely punctulate.....rubiginosus.
        Clypeus rounded on each side of emargination.
          Hind tibiæ stout. Color reddish, elytra paler, striæ not or very faintly punctured.....ægrotus.
          Hind tibiæ slender. Color yellowish-testaceous, striæ distinctly punctured.....consentaneus.
      Large species, .30—.35 inch; color ferruginous.
        Thorax not margined at base, very shining.....politus.
        Thorax distinctly margined at base.
          Disc of thorax coarsely punctured.....rubidus.
          Thorax punctured only at sides.....concavus.
    Thorax black.
      Surface with distinct æneous lustre; tibiæ slender.....subæneus.
      Surface shining, without metallic lustre.
        Clypeus feebly emarginate, broadly rounded on each side.
          Elytra with alternate interspaces yellow.....alternatus.
          Elytra ferruginous at tip.....terminalis.
        Clypeus distinctly angulate on each side of emargination.
          Abdomen and legs piceous or black.....coloradensis.
          Abdomen and legs yellow.....bicolor.
        Clypeus truncate at middle and an acute tooth on each side.....dentiger.
Anterior tibiæ with the upper tooth nearly obsolete; at tip sub-truncate, inner edge sinuate; hind tibiæ stout; Color pale yellowish-testoccous; mesosternum flat.....phalerioides.

A. rubeolus, Beauv. Ins. Afr. et Am. p. 90, pl. 2, fig 4; *copronymus,* Mels. Proc. Acad. ii, 1844, p. 136.—Elongate, pale ferruginous, shining. Head sparsely and finely punctured, clypeus feebly emarginate at middle. Thorax with disc smooth, coarsely punctured toward the sides. Elytra not deeply striate, striæ very feebly punctured interspaces flat, smooth. Hind tibiæ stout, mesosternum distinctly carinate. Length .14—.18 inch: 3.5—4.5 mm.

Easily distinguishable from any of our species by the characters

given in the tables. It differs moreover from *stercorosus* in having the color of the elytra uniform which in the latter species is always clouded.

Occurs from the Middle States to Texas.

A. stercorosus, Mels. Proc. Acad. ii, 1844, p. 136.

Similar in form and color to *rubeolus* but less robust. Head more densely punctured. Thorax finely punctured on the disc with coarse punctures toward the sides. Elytra ferruginous with darker clouding, not deeply striate, striæ more distinctly punctured than in the preceding species. Length .14—.16 inch; 3.5—4 mm.

Not rare in the Middle States and southward.

A. militaris, Lec. Proc. Acad. 1858, p. 65.—Elongate, ferruginous, shining. Head rather coarsely granulose, clypeus emarginate at middle and on each side an acute prominent tooth. Thorax rather coarsely not densely punctured, sides moderately rounded, base distinctly coarsely not densely punctured, sides moderately rounded, base distinctly margined. Elytra parallel, faintly striate striæ finely punctured; interspaces flat, coarsely punctured. Mesosternum distinctly carinate. Length .20—.24 inch; 5—6 mm.

Notwithstanding the original description, the mesosternum will be found to be distinctly carinate. When examined with very high power the elytral interspaces may be seen to be very minutely and densely punctulate. One specimen before me ♀ has the spur of the anterior tibia slender and acute, two others ♂ show no traces whatever of any spur. The anterior tibiæ are normal in their construction and not truncate as in *Coptochirus*.

Three specimens San Diego, Cal.

A. rubiginosus, n. sp.—Elongate, ferruginous, shining. Head densely not coarsely punctured; clypeus emarginate at middle, angulate on each side of emargination. Thorax moderately convex, densely not coarsely punctured, sides moderately rounded, base distinctly margined. Elytra moderately convex, sides slightly rounded rather deeply striate, striæ closely punctured, interspaces feebly convex, densely punctulate. Body beneath rufous, mesosternum flat. Length .22 inch; 5.5 mm.

Male.—Spur of anterior tibia slender, strongly curved backwards, inner spur of middle tibia slender and short.

Closely resembling *militaris* differing in the sexual characters, and by the front being nearly angulate and not bidentate, also by the flat not carinate mesosternum.

One specimen from Camp Grant, on San Pedro River, Arizona.

A. ægrotus, n. sp.—Moderately elongate, shining, pale reddish, elytra paler than the head and thorax. Head smooth very faintly punctulate, clypeus feebly emarginate at middle. Thorax moderately convex, very faintly punctulate with a few coarser punctures on each side of middle, sides feebly rounded and of paler color than the disc. Elytra oval, not obtuse at tip, moder-

ately convex, feebly striate, striæ with very fine punctures, interspaces flat, smooth. Body beneath similar in color to the elytra. Mesosternum flat, hind tibiæ rather stout. Length .16 inch; 4 mm.

Occurs in North Carolina.

A. consentaneus, Lec. Agass. Lake Super. p. 225.—Moderately elongate, shining, yellowish testaceous. Head sparsely punctured, more densely at the sides and in front; clypeus feebly emarginate and on each side broadly rounded, Thorax moderately convex, disc feebly punctured, more densely at the sides. Elytra elongate oval, moderately convex, rather deeply striate, striæ serrately punctured, interspaces moderately convex, sparsely and finely punctulate. Beneath pale yellowish testaceous. Hind tibiæ slender. Anterior tibiæ normally tridentate. Length .20 inch: 5 mm.

The thorax and head are usually darker than the elytra, the disc of this former being slightly clouded with rufous. Resembles superficially *phalerioides*, the differences will be given under that species.

Occurs in Canada, Missouri and Kansas, but is not common.

A. politus, n. sp.—Oblong, smooth, shining, pale ferruginous and broadly rounded on each side. Thorax moderately convex, smooth, shining and with few very coarse punctures as the sides; sides moderately rounded, hind angles broadly rounded, base not margined. Elytra moderately convex, shining, faintly striate, striæ very finely punctured, interspaces flat, smooth, impunctured. Body beneath pale ferruginous, smooth shining. Hind tibiæ stout. Spur of anterior tibia of male broad spatulate and truncate at tip. Length .32 inch: 8 mm.

The lateral margin of the thorax is more distinctly reflexed than in either of the following species and more broadly at the basal angle so that immediately in front of the hind angle the thorax is slightly concave. It is remarkable that one of the characters of the males of Group B should reappear in this species. The hind tarsi are slender and the first joint nearly as long as the three following.

The unique in my cabinet is from Texas.

A. rubidus, Lec. Pacif. R. R. Rep. App. i, p. 41.—Length .30—.35 inch; 7.5—9 mm.

Occurs near San Francisco and southward; not rare.

A. concavus, Say, Journ. Acad. iii, 1823, p. 214, *lævigatus*, Hald. Journ. Acad. Ser. ii, vol. i, p. 103.

These two species resemble each other closely but may be readily distinguished by the thorax of the former being very coarsely but sparsely punctured over its entire surface while the latter has punctures only at the sides. The clypeus of *rubidus* is also more distinctly angulate on each side of the emargination. Both species are shining ferruginous or brown. Elytra rather deeply striate and finely serrately punctured. Interspaces feebly convex and nearly smooth. Inner

spur of middle tibia ♂ stout, obtuse at tip, one-half shorter than the outer spur. Length .32—.38 inch; 8—9.5 mm.

Specimens are from Georgia, Kansas and Nebraska.

A. subæneus. Lec. Pacif. R. R. Rep. 1857, App. i, p. 11.—Oblong, sub-parallel, black, with æneous lustre. Head coarsely punctured more densely toward the sides; clypeus feebly emarginate and rounded on each side; genæ feebly prominent. Thorax very convex, transversely coarsely punctured, more densely toward the sides; sides nearly straight, hind angles nearly rectangular, base distinctly margined. Elytra oblong, robust, sides sub-parallel, faintly striate, striæ finely punctured, interspaces flat, very moderately and sparsely punctulate and alternately distinctly alutaceous. Body beneath black, legs piceous, hind tibiæ rather slender. Length .18—.20 inch, 4.5—5 mm.

The elytra are not uniformly black but have a broad yellow vitta on each occupying the second, third and fourth interspaces, usually irregular on the outer side and extending to the tip of the elytra. Other specimens have the alternate interspaces yellow, the bands being more or less interrupted and not attaining the apex, and one specimen has the second and fourth interspaces yellow, united near apex by an oval spot, and smaller spots at bases of second to sixth interspaces. The apices of the elytra are usually finely alutaceous and the epipleuræ in several specimens rufous.

Occurs at San Francisco, Cal.

A. alternatus, n. sp.—Oblong, black, shining. Head coarsely not densely punctures except at sides and in front. Clypeus feebly emarginate at middle, broadly rounded on each side and very slightly sinuate in front of the moderately prominent genæ. Thorax less convex than in *subæneus*, sides moderately rounded, base faintly margined near the sides, not margined at middle, surface coarsely punctured, coarser and more dense at the sides. Elytra oblong parallel, moderately convex, striate, striæ coarsely punctured, interspaces flat, alternately yellow, and coarsely punctured more densely toward the sides and apex. Body beneath black, legs piceous, hind tibiæ slender. Length .18—.24 inch; 4.5—6 mm.

Varies also in color as in *subæneus*, one specimen before me has the bases of intervals two to six yellow, and the second, fourth and six intervals yellow to apex, another has only the second and fourth, while still another is apparently entirely black, but a strong light shows the alternate intervals very distinctly paler than the others. It resembles *subæneus* in form, but may easily be known by the absence of metallic lustre and the rather coarse punctures of the elytra.

Several specimens from Bitter Root Valley, and one from an unknown region of California.

A. terminalis, Say, Journ. Acad. iii, 1823, p. 213.—Elongate oval, moderately robust, black, shining. Head coarsely punctured and rugose in front; clypeus feebly emarginate and on each side broadly rounded. Thorax sparsely punc-

tured on the disc, more densely and coarsely toward the sides which are moderately rounded; base finely margined. Elytra oval, broader behind the middle, moderately striate, striæ rather coarsely punctured, interspaces flat, distantly punctulate; apices of elytra rufous. Body beneath and legs black, hind tibiæ slender. Length .20 inch; 5 mm.

Occurs from Pennsylvania to Illinois.

A. coloradensis, n. sp.—Elongate oval, black shining. Head coarsely punctured; clypeus emarginate and on each side elevated into an acute tooth; front behind the emargination distinctly impressed. Thorax moderately convex, sides feebly rounded, base distinctly margined, surface coarsely but sparsely punctured with finer punctures intermixed. Elytra broader behind the middle, moderately striate, striæ finely punctured, interspaces very feebly convex and sparsely obsoletely punctulate. Body beneath black, legs piceous, hind tibiæ stout. Inner spur of middle tibia of male slightly hooked at tip. Length .26 inch; 6.5 mm.

For the unique in my cabinet, I am indebted to Mr. James Ridings, who found them rather abundantly in Colorado.

This species recalls the form of *ursinus*.

A. bicolor, Say, Journ. Acad. iii, 1823, p. 212.—Oblong oval, slightly depressed, black, shining. Head coarsely punctured, more densely at the sides and front; clypeus emarginate and rather strongly angulate on each side. Thorax moderately convex, sides feebly rounded, surface coarsely punctured with finer punctures intermixed, base distinctly margined. Elytra oblong, rather deeply striate, striæ finely punctured, interspaces moderately convex and punctulate. Pro- and mesosternum piceous, metasternum, abdomen and legs yellowish. Length .18—.24 inch; 4.5—6 mm.

The elytra are usually black or piceous, but in several specimens before me they are dark ferruginous with the alternate intervals (2—4—6) showing paler rounded spots. The species may be easily known from any in our fauna by its dark color above and yellow legs and abdomen.

Occurs from Canada to Texas.

A. dentiger, Lec. Proc. Acad. 1858, 67.—Oblong oval, piceous black, shining. Head sparsely but coarsely punctured and finely rugose in front; clypeus at middle truncate and on each side an acute slender tooth, outside of which the clypeus is rather deeply sinuate. Thorax moderately convex, sparsely but coarsely punctured on the disc, more densely at the sides, sides feebly rounded gradually narrower in front, base distinctly margined. Elytra broader behind the middle, feebly striate, striæ distantly punctured, interspaces flat, very sparsely and finely punctulate. Body beneath piceous. *Male.* Spur of anterior tibia slightly arcuate, and hooked at tip; inner spur of middle tibia short broad and, deeply emarginate at tip. *Female.* Unknown. Length .26 inch; 6.5 mm.

This species is easily known in the group by the two slender teeth of the clypeus. In the preceding species the angulation of the clypeus is broad at base, the teeth of *dentiger* are slender.

A. phalerioides, n. sp.—Elongate oval, pale yellowish testaceous, shining. Head nearly smooth, finely and very sparsely punctulate; clypeus very feebly emarginate and broadly rounded on each side. Thorax moderately convex, sparsely punctured, sides moderately rounded, base not margined at middle. Elytra elongate oval, yellowish testaceous, slightly clouded with fuscous, feebly striate, striæ finely punctured; interspaces moderately convex, very sparsely punctulate. Body beneath pale yellowish testaceous, hind tibiæ slender. Anterior tibiæ nearly truncate at apex, teeth obtuse, the upper obsolete, inner edge slightly sinuous. Length .24 inch; 6 mm.

A curious species resembling *consentaneus*, in appearance, but may be easily known by its stouter hind tibiæ, and by the peculiar conformation of the anterior.

The specimens in our cabinets are from the Middle States, probably from near the sea coast.

Group M contains several species with the elytra distinctly pubescent over the entire surface and more opaque than in the preceding group.

The species in our fauna are as follows:

Elytra luteous with fuscous cloud; thorax at base margined.
  Anterior tibiæ, ♂, strongly sinuate within, spur hooked.....**Walshii.**
  Anterior tibiæ, ♂, normal, spur broad, truncate.....**femoralis.**
Elytra reddish-yellow; thorax not margined at base.
  First joint of hind tarsus equalling the last four together..... **rubripennis.**

A. femoralis, Say, Journ. Acad. iii, 1823, p. 215.—Oblong, head and thorax black, shining, elytra luteous with broad fuscous space, sub-opaque and pubescent. Head sparsely punctured, margin very feebly reflexed; clypeus feebly emarginate and rounded on each side. Thorax moderately convex, very sparsely punctured, at the sides luteous, sides moderately rounded, base distinctly margined. Elytra luteous with broad fuscous space varying in extent, striæ moderately deep, serrately punctured, interspaces convex usually coarsely punctulate especially near the striæ. Body beneath piceous, femora pale luteous, tibiæ darker. Length .22—.26 inch; 5.5—6.5 mm.

Male.—Elytra more coarsely punctulate, spur of anterior tibia broad, thick and truncate at tip.

Female.—Elytra more sparsely punctulate, spur of anterior tibia slender and acute at tip.

This species resembles *consputus*, of Europe, but may be known by the distinct marginal line at base of thorax as well as by the sexual character of the male. The margin of head is much less distinctly reflexed than in the following species and it is this difference alone that must be relied on to distinguish the female of *Walshii* from *femoralis*. The tibiæ are always much darker in color in the latter species than the femora, while in the former the legs are of one color. This can not however be relied upon to separate them by being a character of comparative, little value from the tendency to variation.

Occurs from Pennsylvania to Kansas. Numerous specimens of this species have been sent me by Dr. Summers from the neighborhood of St. Louis, where it appears to be common.

A. Walshii, n. sp.—Similar in color, form and general appearance to *femoralis* but differing as follows: Head with margin more broadly reflexed, sides of thorax more broadly luteous, base distinctly margined. Elytra moderately deeply striate, striæ feebly punctured; interspaces moderately convex, very sparsely or not at all punctulate. Body beneath as in *femoralis*, tibiæ less fuscous. Length .20—.24 inch; 5—6 mm.

Male.—Anterior tibiæ sinuate within, inner apical angle truncate, spur long, truncate and hooked at tip, upper tooth of outer edge small, becoming obsolete.

Female.—Anterior tibiæ normal, upper tooth small, more distinct, spur slender, acute.

Easily known by the pubescent elytra, and the peculiar sexual characters. In both these species the pubescence consists of short yellowish sub-erect hairs, arranged in a row on each side of each interspace.

Illinois. Dedicated to B. D. Walsh, in whose sudden death economic entomology suffered a serious loss.

A. rubripennis, n. sp.—Oblong, slightly depressed, black shining; elytra reddish-yellow, sub-opaque and pubescent. Head sparsely and finely punctulate, clypeus broadly rounded, not emarginate. Thorax moderately convex, coarsely but sparsely punctured with finer punctures intermixed, sides moderately rounded, base not margined. Elytra finely striate, striæ finely punctured, interspaces feebly convex, sparsely and irregularly punctured. Body beneath black, shining, tarsi rufous. First joint of hind tarsi as long as last four together. Females only are known, the tibial spurs all slender and acute Length .28—.30 inch; 7—7.5 mm.

Two specimens, one from Canada and another from Pennsylvania. The elytra are much more sparsely pubescent than in either of the two preceding species.

Group N contains a single species in our fauna, easily known by the unequal spinules of the apex of the hind tibiæ, the sides of the thorax distinctly sinuate near the hind angle, and by the sides of the elytra being parallel and the clypeus denticulate.

A. oblongus, Say, Journ. Acad. iii, 1823, 215. *badipes*, Mels. Proc. Acad. 1844, p. 135.—Oblong, black, shining. Head finely punctured, more densely at the sides; clypeus deeply emarginate at middle and acutely dentate on each side. Thorax broad, moderately convex, coarsely but sparsely punctured, with finer punctures intermixed; sides moderately rounded, sinuate near the hind angles, base distinctly margined. Elytra parallel, obtuse at tip, not deeply striate, striæ moderately punctured, interspaces flat, finely and sparsely punctulate. Body beneath piceous, legs black. Length .36 inch; 9 mm.

Male.—Spur of anterior tibiæ broad, truncate and hooked at tip or feebly emarginate; inner spur of middle tibiæ short, robust.

Female.—Spur of anterior tibiæ robust but acute at tip; inner spur of middle tibiæ robust but longer than in male.

This species occurs from Pennsylvania to Colorado.

Group O contains also but one species, readily known by the unequal spinules fringing the apex of the hind tibiæ, head not tuberculate, thorax distinctly sinuate at the sides near the basal angles, basal marginal line wide and deep, clypeus emarginate and broadly rounded, elytra oval, mesosternum between the coxæ feebly convex, hind tibiæ stout, first joint of the hind tarsi equal to the three following united.

A. ovipennis, n. sp.—Oblong, brownish or piceous, moderately shining. Head not densely nor coarsely punctured; clypeus emarginate at middle, broadly rounded on each side; genæ prominent. Thorax broader than long, narrower at base, sides broadly rounded in front, rather deeply sinuate near the hind angles, base broadly rounded, margined line broad, deep, and coarsely punctured; surface moderately convex, very coarsely and deeply punctured. Elytra oval, broadest at middle, convex, rather deeply striate, striæ rather finely and distantly punctured, interspaces moderately convex, very sparsely punctulate. Body beneath piceous black, legs rufo-piceous. Mesosternum coarsely punctured, between the coxæ convex, sub-carinate. Epipleuræ visible from above, humeral angles consequently dentiform. Length .30—.34 inch; 7.5—8.5 mm.

The three specimens before me show no sexual characters among themselves. The species is one of the most distinct in our fauna, and may readily be distinguished from any *Aphodius* known to me by the characters above given.

Found under stones in dry places at Fort Tejon, Cal.

Aphodius cadaverinus, Mann. Bull. Mosc. 1843, ii, 261.

The description of this species (from Russian America) is too short and uncharacteristic to enable me to define its position.

DIALYTES, Harold.

Dialytes. Harold, Col. Hefte, V, 1869, 101.

D. truncatus, Mels. Proc. Acad. 2, 135. *corvinus*, Hald. Journ. Acad. Ser. 2, vol. 1, p. 104. Harold, loc. cit.—Oblong, black, convex. Head strongly deflexed, coarsely but sparsely punctured; front hemihexagonal, sides very feebly rounded; clypeus feebly emarginate. Thorax broader than long, convex, coarsely but not closely punctured, sides feebly rounded in front, deeply but gradually sinuate at base, base distinctly margined. Elytra oblong, broader behind the middle, strongly convex and very obtuse at apex, humeri dentiform; surface moderately deeply striate, striæ punctured, interspaces flat but strongly carinate near the apex, impunctured. Body beneath sub-opaque, coarsely punctured, legs brownish ferruginous, coarsely punctured, tibiæ with feeble transverse carinæ. First joint of middle and hind tarsi longer than the three following. No special sexual characters have been observed. Length .22—.24 inch; 5.5—6 mm.

Not common. Occurs in the Middle States and Canada (Pettit).

D. striatulus, Say, Journ. Acad. V, p. 192. *cribrosus*, Lec. (Rhyssemus,) Agass. Lake Super. p. 225. Harold, loc. cit.—Oblong, robust, piceous black, opaque. Head coarsely punctured; front hemihexagonal, clypeus feebly emarginate at middle and subangulate on each side. Thorax strongly convex, densely cribrate and with a distinct, broad longitudinal impression; sides nearly straight in front, deeply sinuate at base; distinctly margined at the sides. Elytra oval, strongly convex, slightly broader behind the middle, surface strongly, acutely cariuate, intervals with a single row of coarse punctures. Body beneath opaque, coarsely punctured. Legs brownish, coarsely punctured. First joint of middle and hind tarsi long. Length .16—.20 inch; 4—5 mm.

Occurs from the Middle States northward to Canada, but not common.

———o———

Descriptions of new species of HISTERIDÆ of the United States.

BY GEO. H. HORN, M. D.

HISTER, Linn.

H. Ulkei, n. sp.—Oblong oval, sides feebly rounded, black, moderately shining. Front with distinct semicircular line. Thorax convex, sides feebly rounded, slightly broader behind, margin fimbriate with short hairs; exterior stria close to margin, entire, inner stria distant, slightly sinuous and more distant in front. Elytra with three entire dorsal striæ, a fourth and fifth apical, the former being one half and the latter one-third the length of third; sutural stria abbreviated in front; subhumeral stria extending one-half from apex to base and close to the first dorsal, gradually diverging and with a short slightly arcuate extra-humeral stria; oblique humeral stria distinctly impressed. Pygidium and propygidium coarsely punctured, the latter rather more sparsely. Body beneath black, shining, abdomen fuscous and coarsely strigosely punctured toward the sides; side pieces of meso- and metasterna with few coarse punctures. Anterior tibiæ bidentate, hind femora and tibiæ stout, the latter irregularly biseriately spinulose. Length (tip of suture to anterior margin of thorax) 20 inch; 5 mm.

This species differs from all our others of group 3, Lec., by its more elongate form, very obtuse in front, and by the well defined internal subhumeral stria with extra-humeral appendage and also by the presence of the fourth and fifth dorsal striæ. The legs are entirely black, the hind tibiæ robust as in *arcuatus* and irregularly biseriately spinulose. This species should be referred to the fourth group of Marseul.

I have named this species in honor of Mr. H. Ulke, of Washington, by whom it was sent me under the name *instratus*, which species has no subhumeral stria. The elytra are colored as in *instratus*.

Occurs in Nebraska.

H. Arizonæ, n. sp.—Oval, moderately convex, black, shining. Antennæ piceo-rufous. Front with distinct semi-circular stria. Thoracic margin sparsely pilose, and with two entire nearly parallel striæ. Elytra rufous and with

margins, and quadrangular scutellar spot, black, with three entire dorsal striæ, a trace of a fourth at apex, sutural stria short abbrevated at each extremity; oblique humeral stria distinct; subhumeral stria internal, as deep as the next dorsal and one-half nearer to it than the second, obliterated at humerus and without arcuate appendage. Propygidium and pygidium coarsely not densely punctured. Side pieces of meso-and metasternum cribrose, abdominal segments at sides coarsely punctured. Anterior tibiæ bidentate, middle and posterior tibiæ biseriately spinulose, the latter being strongly compressed and the spinules distantly placed. Length (ant. margin of thorax to tip of suture) .18 inch; 4½ mm.

Resembles *H. biplagiatus*, Lec., in color and size but it is less broadly oval.

One specimen. Camp Grant, Arizona.

H. Gloveri, n. sp.—Oblong ovate, robust, convex, black, shining. Antennæ piceous, club paler. Front convex, frontal stria obsolete. Thorax with sides rounded, gradually narrower in front, margin sparsely flavo-fimbriate; two lateral entire striæ more distant anteriorly, the inner sinuous at its middle; surface smooth. Elytra with short rather deeply impressed sub-humeral stria, three entire dorsals with distant punctures near their apices; fourth and fifth very short, apical; sutural abbreviated in front. Propygidium and pygidium coarsely punctured, the latter more densely. Inflexed portion of elytra excavate, epipleuræ bistriate. Mesosternum and metasternum smooth, side pieces coarsely but distantly punctured. Anterior tibiæ bidentate, middle biseriately spinulose, posterior thickened, very irregularly spinulose. Length (from apex of thorax to end of suture) .24 inch; 6 mm.

A very distinct species from any known to me. The sub-humeral stria is short, its apical portion being replaced by a few moderately large punctures. In front of the fourth and fifth striæ similar punctures are seen. Its color is entirely black.

This species must be referred to Group 3, Lec. (Proc. Acad. 1852, p. 38) and Group 5, A., Marseul.

For the unique in my cabinet, I am indebted to Mr. Townend Glover, of the Agricultural Department, to whom I with pleasure dedicate it. It was found near Fort Cobb, Indian Territory.

H. militaris, n. sp.—Oblong oval, sides feebly rounded, black shining, elytra red, with scutellar spot, apical and middle of lateral margin black. Front slightly concave, with distinct semicircular line. Sides of the thorax very feebly rounded, and slightly narrower in front, margin glabrous. Internal stria entire, straight, external stria short. Elytra feebly convex with three entire dorsal striæ and short fourth and fifth striæ at apex, sutural stria with basal fourth obliterated; oblique humeral stria short, feebly impressed. Pygidium and propygidium densely punctured. Anterior tibiæ sub-tridentate, posterior tibiæ slender, biseriately spinulose. Epipleuræ bistriate. Antennal fossæ shallow. Body beneath and legs black. Length (apex of suture to anter. margin of thorax) .18 inch; 4.5 mm.

Notwithstanding the sub-tridentate tibiæ and glabrous thoracic

margin (the latter may be accidental) I retain this species in Group 3, Leconte, on account of the very shallow antennal fossæ. It differs from all our species to which it is allied by the outer marginal thoracic stria being short and scarcely extending one third from the anterior angle toward the basal margin. The elytra have no trace of subhumeral stria, the first three dorsals are entire, the next two short, the fourth having the anterior half obliterated, the fifth the anterior two-thirds. At the base opposite the fifth stria, on one elytron, are two punctures and on the other a very short stria.

This species must be referred to Marseul's Group 7.

One specimen, somewhat injured, collected at Fort Yuma, California.

The description of our species of Group 3, Lec., are widely scattered and as those with red elytra resemble each other closely in description, the following table is offered as a guide to our students of this family. The arrangement of Marseul is so widely different from that of Dr. Leconte that our nine species are spread in four groups. The numbers in parenthesis indicate the latter groups.

Marginal stria of thorax entire.
  Elytra without subhumeral stria.
    Hind tibiæ compressed, biseriately spinulose, spinules distant; margin of thorax sparsely fimbriate.....**biplagiatus**, Lec. (7).
    Hind tibiæ stouter, spinules very irregularly biseriate; margin of thorax fimbriate with long hairs.....**sellatus**, Lec. (7).
  Elytra with distinct subhumeral stria.
    Subhumeral stria internal, and with humeral arcuate appendage.
      Form broadly oval; femora rufous, hind tibiæ robust, fourth dorsal stria very short or wanting ....**arcuatus**, Say, (4).
      Form oblong; femora piceous; fourth dorsal stria extending three fourth to base.....**Ulkei**, Horn, (4).
    Sub-humeral stria internal, not appendiculate at humerus.
      Outer edge of anterior tibia not dentate, color entirely black.....**lævipes**, Er. (2).
      Outer edge of anterior tibia bidentate; elytra in great part red.....**Arizonæ**, Horn, (2).
    Sub-humeral stria external, short, visible only at humerus.
      Body entirely black, form robust, convex.....**Gloveri**, Horn, (5).
      Elytra red in great part, less convex, broader .....**instratus**, Lec. (5).
Marginal stria of thorax short, visible only in front.....**militaris**, Horn, (7).

The above mentioned species have the thoracic margin more or less fimbriate, and with the exception of *lævipes* the anterior tibiæ are bidentate. Two are entirely black the others have red elytra with a

scutellar black spot and the sides, apex, and base usually margined with black.

HETÆRIUS, Erichs.

H. californicus, n. sp.—Broadly ovate, convex, reddish-brown, shining. Front concave, margin elevated, rather coarsely punctured and hairy. Thorax with a deep oblique sulcus on each side, margin thick, very convex, and with a deep impression at middle. Elytra seriately setulose, and with two discal striæ, of which the outer only is entire, an entire sub-humeral, extending from base to apex. Pygidium convex, smooth, inferior. Propygidium smooth, convex, vertical. Prosternum compressed between the coxæ, broader behind, emarginate at apex, lobed at base. Mesosternum with middle lobe rounded, prominent, lateral lobe prolonged, acute, and with deep fossa on each side. Body beneath paler, smooth, shining. Length .09 inch; 2.25 mm.

The disc of the thorax between the grooves is moderately convex, rather coarsely punctured and hairy, the margin is very convex and with a very deep impression at the middle, in front of which the surface is coarsely punctured and hairy, and behind smoother. The oblique sulcus is deeper and broader at base. The sides of thorax are gradually rounded from base to apex. The prosternal lobe is quite prominent and slightly emarginate at apex. The prosternum between the coxæ has on each side a finely elevated line.

This species resembles *brunnipennis*, Lec., and may be known by the sides of the thorax being rounded, not oblique, the impression at middle of margin deeper, the disc punctured and hairy, the elytra broader, and the striæ deeper. In its general form this species is broader and more convex.

For a single specimen of this species, I acknowledge great indebtedness to Mr. James Behrens, of San Francisco, who has already contributed several uniques of scientific interest to my cabinet.

One specimen from Sonoma, California. Occurs probably with ants as do our other species of *Hetærius*.

TRIBALUS, Erichs.

T. californicus, n. sp.—Oblong oval, moderately convex, slightly shining. Head coarsely but sparsely punctured, front near eyes elevated. Antennæ frontal, piceo ferruginous, club annulated, truncate and testaceous; antennal fossa at anterior angle of thorax concealed from beneath by a well developed pectoral plate. Thorax twice as broad at base as long, moderately convex, sides gradually rounded from base to apex, lateral margin distinctly reflexed, surface rather coarsely and moderately densely punctured. Elytra more shining than thorax, moderately convex, and with four slightly elevated costæ of which the outer three are entire, the inner one half the length of elytra, also a marginal ridge becoming inferior at its posterior half, attaining the apex but fainter at tip, and a sub-marginal fainter ridge of half the length of the elytra; intervals between costæ irregularly sub-biseriately punctured; disc of elytra with series of moderately coarse punctures. Mesosternum arcuate

in front, sparsely punctured, side pieces and first abdominal segment coarsely punctured. Pygidium inflexed, coarsely punctured. Legs piceo rufous. Length .07 inch; 1¾ mm. (Entire length).

Notwithstanding several of the characters above given the species is placed in *Tribalus*, from the position of the antennal fossæ, the insertion of the antennæ and the form of the club. The inflexed pygidium has an analogue in *lævissimus*, Lec. The elytral sculpture is peculiar and recalls *Onthophilus*, from which however it differs in its very distinct and prominent prosternal lobe. The disc of the elytra (the portion between the two inner ridges, shows rows of fine punctures which show a tendency to become striæ. The sutural row is entire and not striate, the next inner row is striate at base, arched, uniting with the sixth row which is also striate and extends in form of stria nearly half the length of the elytra; the fifth row also becomes slightly striate at its apical portion. Between the inner short ridge and the next inner stria are moderate punctures arranged more regularly biseriately than those between the costæ.

An unique specimen of this insect was sent me by Mr. H. Edwards, of San Francisco, by whom it was collected in the neighborhood of that city.

ONTHOPHILUS, Leach.

O. Lecontei, n. sp.—Broadly oval, moderately convex, black, shining. Front coarsely punctured, anteriorly variolose, feebly triangularly elevated and with a short, faint carina at vertex. Thorax densely and coarsely punctured, nearly twice as broad at base as long, sides feebly rounded, gradually narrower to the front, margin smooth, and thickened, apex feebly emarginate, base broadly rounded; disc with six elevated lines, the central pair attaining the apex, but not the base of thorax, the next outer abbreviated at each end, the outer costæ stronger, attaining the base and slightly curved outward toward the basal angle. Elytra scarcely broader than the base of thorax, disc feebly convex and with seven rather strongly elevated costæ, interstices finely bicarinate and with a row of distant coarse punctures, margin inflexed, sinuous and carinate. Propygidium convex, slightly more elevated along the middle, coarsely punctured. Pygidium coarsely punctured, oval, oblique. Prosternum coarsely punctured, slightly concave. Mesosternum very coarsely punctured, variolose. Length .16 inch; 4 mm.

This species is our largest and is more regularly oval and less convex than any other of our species. The head is much less distinctly triangularly carinate, the converging ridges being almost obsolete in front; the carina of the vertex is also very faint. The thorax is broadest at base, gradually narrowing to apex and with feebly rounded sides. The outer carina of the disc is much stronger and attains the basal margin of the thorax. The elytra have seven distinct costæ on the disc without the sutural elevation. Between the costæ the in-

terspaces are feebly bi-carinulate, often interrupted, and between these, in the centre of the interspace, is a row of large distant punctures. The elytra are but slightly broader at base than the base of the thorax, the general form of the insect being thus more nearly a regular oval than any of our species. The prosternum is coarsely punctured, the mesosternum still more coarsely.

A single specimen collected by myself at Fort Tejon, Cal.

SAPRINUS, Leach.

S. estriatus, Lec. Pacif. R. R. Surv. App. I. p. 36.

Fine large specimens of this species collected by myself in Owen's Valley, California, enable me give a full description of it. Its position in the genus is, according to the arrangement of Leconte, in Group 8, in Marseul, Group VI, a. The head is distinctly margined in front, the prosternum is bi-striate, the striæ approximate and rather strongly divergent behind. The front has two distinct chevrons bounded by feebly impressed lines and apt to be indistinct. The species is robust recalling that of *sulcifrons*, but more oval, Head sparsely punctured moderately convex and subopaque. Thorax strongly convex, sides gradually and feebly rounded from base to apex; disc densely punctured, more coarsely toward the sides and with two rows, each of four badly limited smoother patches arranged in a transverse arc with the convexity forward. Elytra densely punctured, each with three moderately well defined round, smooth, patches arranged in an oblique row, the outer at the humerus, the middle smaller within and slightly behind the first, the inner larger than the last near the suture and in front of middle; a narrow apical margin is also smooth. Toward the sides are two obsolete striæ, the inner one at the inner edge of the humeral space extending nearly to the apex, the outer stria interrupted by the humeral space and shorter than the first. The body beneath is much less densely punctured than the upper surface. The anterior tibiæ five or six dentate, posterior tibiæ biseriately strongly spinulose. The color of the body is nearly black, opaque and with a very faint bronzed tinge. Antennæ piceous, club rufous. Pygidium densely punctured at the sides, median space and apex smooth. Length .18—.24 inch; 4.5—6 mm.

The smaller specimen is in the cabinet of Dr. Leconte, and is reported from Oregon, three others of the large size are from Owen's Valley, Cal., and were collected by myself. In the Oregon specimen the lateral striæ are scarcely perceptible, in one of the larger they are quite distinct, the other two intermediate, forming a gradual series.

S. æquipunctatus, n. sp.—Oblong oval, moderately convex, black, sub-opaque. Head densely punctured. Thorax with sides moderately rounded, slightly narrower in front, anterior angles rounded, surface very densely punctured and rather more coarsely at the sides. Elytra densely and evenly punctured and with a sutural stria extending from apex two-thirds to the base, and four dorsal striæ parallel and not arcuate at basal end, the inner being two-thirds the length of the elytra the outer ones gradually longer, humeral stria obliterated at humerus but distinct beyond. Prosternum transversely convex, and with striæ divergent in front terminating in a fossa. Meso- metasternum, abdomen and legs coarsely punctured, side pieces of sterna cribrate. Pygidium very convex, coarsely and densely punctured. Anterior tibiæ 6-denticulate. Length (anterior margin of thorax to tip of suture) .14 inch; 3½ mm.

This species as the above noted characters exhibit should be placed in Group 6 (Lec. Proc. Acad. 1852, p. 49.) and in Group 2 of Marseul's System. It resembles *punctatissimus*, Er. in its sculpture being however more elongate and less convex and differs from it as well as our own species in having the inner dorsal stria straight and not arcuate at basal end. Two of our species of this group have the entire surface of the body rather densely punctured and without smooth spaces, *insertus*, Lec., and *obductus*, Lec., these have the inner dorsal arched at base uniting with the sutural. The margin of the thorax is not fimbriate.

The specimens of the species have been received from Mr. Jas. Behrens, collected near San Francisco and sent with a catalogue number 858.

The two following species having been recently reported within our faunal limits, short descriptions of each have been given that they may be known if in the cabinets of any of our students. Full descriptions with admirable figures may be found in the Monograph of Marseul.

S. cubæcola, Mars. Monog. 1855, p. 467, pl. 18, fig. 88.—Similar in form to *S. pennsylvanicus*, but less convex and with the sides of the elytra less rounded and the sides of the elytra more convergent toward the apex. Head faintly bronzed, moderately coarsely but not densely punctured, and more sparsely at apex. Thorax distinctly bronzed, disc smooth, sides finely punctured, punctures narrowly extending along the base. Elytra black, densely and rugosely punctured, punctures becoming finer and substrigose at apex; scutellar region less densely punctured, humeri and sides of elytra smoother; elytral striæ almost entirely obliterated; sutural stria entire. Pygidium moderately convex and with the propygidium rather densely and coarsely punctured. Prosternum convex and with the striæ ascending in front. Mesosternum distinctly punctured. Metasternum smooth at middle, finely punctured at the sides and coarsely at base. Length (apex of thorax to tip of suture) .20 inch; 5 mm.

The striæ of the elytra are indicated merely by the closer approximation of punctures, the first two attaining nearly the middle, the other

two, very short, the inner united with the sutural by several larger punctures forming a faint arch. Humeral stria very fine.

One specimen from Key West, agreeing with all the characters given by Marseul. The species may be found farther north.

S. æneicollis, Mars. Monog. 1855, p. 424, pl. 17, fig. 56.—Very closely resembles *S. pennsylvanicus*, but may be at once distinguished by the deep groove around the lateral and apical margins of the pygidium. The entire upper surface is shining, thorax bronze and elytra blue, with a tinge of green. The elytra have the first and second striæ distinctly marked, extending three fourths of the length of the elytra; third stria short, basal; fourth extending to middle and arching at base to join the sutural; oblique humeral stria distinct but fine, internal subhumeral obliterated, external very short. Surface of elytra sparsely and finely punctured, apical region with coarser punctures extending forward in lines to meet the striæ, and also more numerously along the suture. Length (from apex of thorax to tip of suture) .20—.22 inch; 5—5.5 mm.

This species has already occurred in south-western Texas.

PLEGADERUS, Erichs.

P. nitidus, n. sp.—Oblong, moderately convex, black, shining. Antennæ piceous, club paler. Head punctured. Thorax broader than long, narrower in front, sides at middle slightly sinuate, disc divided by a transverse sulcus into two unequal portions, sparsely and rather finely punctured the anterior portion rather more densely punctured than the posterior and more densely and coarsely near the lateral groove. Margin rather coarsely punctured and more densely in front. Lateral groove not attaining the basal margin. Elytra sparsely punctured but more densely and coarsely than the thorax. Prosternum bicanaliculate, median convex portion broadly interrupted and with a patch of silken hairs. Meso- and metasternum very finely and sparsely punctured, side pieces and first abdominal segment coarsely punctured. Legs piceous, anterior tibiæ gradually broader and very finely denticulate. Length (from apex of thorax to tip of elytral suture) .09 inch; 2¼ mm.

Three specimens from Nevada, one of which was sent me by Mr. Henry Edwards, of San Francisco.

This is our largest species and may be distinguished at a glance by the shining black color of the thorax.

P. fraternus, n. sp.—Oblong, moderately convex, piceous black, shining. Antennæ picco-rufous, club paler. Head coarsely and rather densely punctured, but densely on the vertex. Thorax slightly broader than long, sides rounded in front, parallel behind the transverse groove. Disc unequally divided by a well defined transverse impression, anterior portion smaller; surface shining, sparsely punctured, slightly more densely on the anterior portion. Basal margin with a row of large rather closely placed punctures. Lateral groove attaining the basal margin, thickened margin coarsely punctured. Elytra coarsely and closely punctured. Prosternum bicanaliculate, median portion divided near apex by a broad transverse groove, silky pubescent at bottom. Anterior portion of middle of prosternum triangular coarsely punctured, sternal side pieces and first abdominal segment very coarsely punctured. Anterior

tibiæ gradually dilated and distinctly denticulate. Hind tibiæ slender. Length .05 inch; 1¼ mm.

Two specimens from Nevada, from Mr. Wm. M. Gabb.

Our North American species of *Plegaderus* have certain characters in common:—Thorax with more or less distinct transverse impression, base not margined, lateral thickened margin not interrupted. Oblique dorsal stria wanting or very indistinct. They may be distinguished as follows;

Transverse thoracic impression visible only at the sides; lateral groove not attaining the basal margin.....**Erichsonii**, Lec.

Transverse impression moderately deep, anterior and posterior portions of disc convex.

Elytra coarsely longitudinally strigose.....**transversus**, Say.

Elytra punctured uniformly.

Prosternum with a single sulcus on each side; transverse sulcus behind the middle; anterior division of middle convex portion elongate oval coarsely punctured. Lateral sulcus of pronotum attaining basal margin, disc coarsely punctured.....**Sayi**, Mars.

Prosternum with two distinct sulci on each side.

Lateral sulcus of pronotum not attaining the basal margin, disc finely punctured. Base of thorax without a line of coarse punctures. Anterior division of middle convex portion of prosternum broader than long; transverse sulcus in front of middle.....**nitidus**, Horn.

Lateral sulcus attaining basal margin; the latter with a row of coarser punctures. Transverse sulcus of prosternum behind the middle and deep; anterior division elongate triangular, coarsely punctured, posterior portion very small.....**fraternus**, Horn.

Description of Plate I.

1. Hister Gloveri, *Horn.*
2. Hister Arizonæ, *Horn.*
3. Hister Ulkei, *Horn.*
4. Hister militaris, *Horn.*
5. Margarinotus guttifer, *Horn.*
6. Hetærius morsus, *Lec.*
7. Hetærius californicus, *Horn.*
8. Hetærius brunnipennis, *Rand.*
9. Hetærius setiger, *Lec.*
10. Onthophilus, Lecontei, *Horn.*
11. Tribalus californicus, *Horn.*
12. Saprinus estriatus, *Lec.*

Descriptions of new species belonging to the sub-family PIMPLARIÆ found in America north of Mexico.

BY E. T. CRESSON.

ACŒNITES, Grav.

Acœnites rupinsulensis. Walsh, MS. —♀.—Entirely pale honey-yellow, polished; antennæ blackish at base above, short, with thick set joints; tip of mandibles and vertex black; legs short, posterior femora swollen; wings hyaline. Length 4 lines.

Hab.—Illinois. Sent me by Mr. Walsh named as above, along with other Ichneumonidæ with MS. names attached. Now that he is gone, I hesitate no longer to describe them, always adopting his names when not pre-occupied, and recognizing him as the discoverer of the species.

EPHIALTES, Grav.

Ephialtes perlongus, n. sp.—♂.—Head and thorax black, polished; antennæ black; palpi white; abdomen very long, slender, cylindrical, piceous-black, pale at base of segments, alutaceous, first segment elongate, bicarinate, deeply excavate at base, the following segments at least twice longer than broad, segments 2 and 3 with a lateral deeply impressed line; face with a dense pale sericeous pile; legs honey-yellow, tips of posterior femora and their tibiæ and tarsi entirely, fuscous, sericeous; wings hyaline, beautifully iridescent. Length 5½ lines.

Hab.—Massachusetts.

Ephialtes albipes. n. sp.—♀.—Long, slender, black, opaque, pale sericeous in certain lights; palpi, scape beneath, tegulæ and four anterior coxæ and legs, white; posterior coxæ and femora honey-yellow, their trochanters white, with a black spot above, their tibiæ and tarsi fuscous, the former whitish at base; wings hyaline, beautifully iridescent; abdomen sub-cylindrical, surface smooth, without any elevations or depressions, the second and following segments about twice longer than broad; ovipositor shorter than abdomen, the sheaths scarcely pubescent. Length 4½ lines.

Hab.—New Jersey.

EPIMECIS, Brullé.

E. Wiltii, n. sp.—♀.—Pale honey-yellow, polished; head, except month, and palpi black; antennæ nearly as long as the body, brown-black; wings yellow-hyaline, iridescent, with a fuliginous band across the middle, emarginate outwardly, and a broad one at tip, nervures and stigma yellow except within the fuliginous band; tips of tarsi dusky; four apical segments of abdomen dusky (probably discolored); ovipositor exserted half the length of abdomen, ferruginous, valves black. Length 7 lines.

Hab.—Ohio. Closely allied to *fascipennis*, Cresson, from Cuba, which is smaller, and has the outer margin of the median fuliginous band on anterior wing perfectly straight and not emarginate as in *Wiltii*, and the posterior tibiæ and tarsi are entirely fuscous.

Dedicated to Mr. Charles Wilt, to whom the Society is indebted for the unique in its collection.

PIMPLA, Fabr.

The species of this genus, as far as known to me, may be distinguished by the characters given in the following table.

Body black.
- Legs black, anterior pair pale in front; scutellum white.....1. **maura**, n. sp.
- Legs yellowish-red, posterior pair varied with black and white.
  - Coxæ black..... ..... 2. **atrocoxalis**, n. sp.
  - Coxæ yellowish-red.
    - Posterior tibiæ and tarsi entirely black or fuscous.
      - Wings hyaline; abdomen sparsely punctured.....3. **pedalis**, Cress.
      - Wings fuliginous; abdomen finely granulated.....4. **texana**, n. sp.
    - Posterior tibiæ black, annulated with white.
      - Posterior tarsi entirely black or fuscous.
        - Scutellum black, tegulæ and anterior coxæ black..5. **tenuicornis**, Cress.
        - Scutellum black, tegulæ white, anterior coxæ yellowish-red..... .....6. **annulipes**, Brullé.
        - Scutellum white .....7. **aquilonia**, n. sp.
      - Posterior tarsi with basal half of first joint only, white.
        - Posterior tibiæ black, with a white annulus near base.
          - Antennæ black above, fuscous beneath; mesothorax entirely black; tip only of scutellum white.....8. **Ontario**, n. sp.
          - Antennæ fuscous above, pale luteous beneath with black incisures; mesothorax with two short discal white lines; scutellum white.....9. **picticornis**, n. sp.
        - Posterior tibiæ with narrow annulus at base and stripe beneath, reaching to apical third, white.....10. **novita**. n. sp.
      - Posterior tarsi with two basal joints white tipped with black, scape white; size small, slender.....11. **indagatrix**, Walsh.
      - Posterior tarsi white, the joints tipped with black.
        - Antennæ pale luteous, incisures black.....12. **annulicornis**, Walsh.
        - Antennæ unicolorous, brown or ferruginous.
          - Abdominal segments with narrow white apical margins.....13. **conquisitor**, Say.
          - Abdominal segments entirely black.
            - Areolet of anterior wing incomplete.....14. **incompleta**, n. sp.
            - Areolet of anterior wing complete.
              - Head entirely black (♀), face white (♂); tegulæ white.....15. **inquisitor**, Say.
              - Clypeus only, scape beneath, tegulæ and most of four anterior legs white (♂).....16. **alboricta**, n. sp.
              - Clypeus, more or less, anterior orbits, tegulæ, line before, and tip of scutellums, white; pleura more or less red.
                - Pleura almost entirely red; two dots below insertion of antennæ, clypeus entirely and dot on each side of metathorax behind, white.....17. **rufopectus**, n. sp.
                - Pleura red only before middle coxæ; tip of clypeus more or less blackish; no white dots below insertion of antennæ; metathorax immaculate.....18. **scriptifrons**, Walsh,

Legs entirely red or yellowish-red, sometimes obfuscated.

Thorax entirely black, smooth and polished.....19. **pterelas**, Say.

Mesothorax at sides, scutellum and pleura, sanguineous...20. **notanda**, n. sp.

Body black, most of abdomen and legs sanguineous.....21. **rufovariata**, n. sp.

1. **Pimpla maura**, n. sp.— ♀.—Black, supopaque; dot on tip of scape beneath, spot on scutellum, sub-obsolete line on postscutellum, and anterior legs in front, whitish; wings dark fuscous, nervures and stigma black, the latter pale at base; antennæ brown-black. Form robust; head and thorax rather finely punctured, face rugosely so; metathorax transversely rugose; abdomen robust, segments short and transverse, densely and coarsely punctured, extreme apical margins smooth; excavated base of first segment smooth and polished; ovipositor much shorter than abdomen, robust, sheaths finely pilose. Length 6 lines.

Hab.—Texas. This is our largest and most robust species, and easily distinguished by the color, both of body and legs, being almost entirely black.

2. **Pimpla atrocoxalis**, n. sp.— ♀.—Head, thorax, abdomen, coxæ and trochanters entirely black; rest of legs yellowish-red; wings subhyaline, tinged more strongly with fuliginous toward apex; (antennæ wanting). Form subrobust, very densely punctured, the punctures more coarse on abdomen; posterior femora robust; abdomen subfusiform, seventh segment less densely and coarsely punctured than the others and shining. Length 5½ lines.

Hab.—Hudson's Bay Territory. Readily known by the reddish legs, with all the coxæ and trochanters black.

4. **Pimpla texana**, n. sp. — ♀.—Black, head and thorax shining; clypeus and mandibles dark rufous; a white spot between eye and base of mandible; antennæ brown-black, slender; mesothorax, scutellum and pleura smooth and polished; metathorax sub-truncate behind, with a carina on each side, meeting above and forming a small conical cell on the disk; wings uniformily fusco-hyaline, nervure black, stigma brown, areolet rhomboidal; legs, including all the coxæ, rufous, posterior tibiæ and tarsi black; abdomen with upper surface not impressed, finely granulated, with a silky gloss. Length 4 lines.

Hab.—Texas. Very distinct from *pedalis* by the dark wings and finely granulated abdomen.

7. **Pimpla aquilonia**, n. sp.— ♂.— Black, head and thorax shining; metathorax and abdomen with a short, rather dense, pale sericeous pile; antennæ slender, testaceous, scape fuscous; tegulæ and spot on scutellum, white; metathorax smooth and rounded; wings hyaline, iridescent, stigma and veins brown-black, former pale at base, areolet rhomboidal; legs yellowish-red, anterior coxæ paler, posterior tibiæ black, with a rather broad white annulus, their tarsi blackish, the joints slightly paler at base; abdomen narrow, slightly broader towards apex, opaque, very densely and minutely punctured. Length 3½ lines.

Hab.—Maine. Differs from *tennicornis* by the shape and sculpture of the abdomen, which in the latter species is narrowed towards apex, the segments constricted at base, the surface densely and coarsely punctured, with the apical margin smooth and polished; while in *aquilonia* the surface is even, entirely punctured and very minutely so.

8. **Pimpla Ontario**, n. sp.—♂.—Black, shining; face, clypeus, mandibles except tips, palpi, spot on scape beneath, tegulæ and apex of scutellum and postscutellum, white; wings hyaline, iridescent, stigma and veins blackish, the former with a white spot at base, areolet small, 5-angular; legs yellowish-red, four anterior coxæ and trochanters beneath white, posterior tibiæ and tarsi blackish, with a broad annulus on the former and basal half of first joint of the latter, white; metathorax shining, delicately punctured, with a short pale pubescence, apex rounded; abdomen long, narrow, sub-cylindrical, closely and delicately punctured; antennæ long, subrobust, and of uniform thickness throughout. Length 5 lines.

Hab.—Canada.

9. **Pimpla picticornis**, n. sp.—♂.—Black; face (except short longitudinal, elevated black line on middle), clypeus, spot on mandibles, palpi, narrow anterior orbits slightly interrupted before summit, scape beneath, tegulæ, spot beneath, scutellum, postscutellum, *two short lines on disk of mesothorax*, anterior coxæ and trochanters, and four anterior tibiæ and tarsi, white; antennæ long, setaceous, brown above, pale luteous beneath, with incisures black; wings hyaline, iridescent, apex faintly clouded, stigma black, pale at base and apex, areolet moderate, 5-angular; metathorax polished, not abrupt behind; legs pale yellowish-red, posterior tibiæ and tarsi black, a rather narrow annulus near base of former and base of first joint of latter, white; abdomen broader than usual for the sex, very densely and confluently punctured, with a fine pale sericeous pile; lateral swellings transverse. Length 4½ lines.

Hab.—New Jersey. Quite distinct from all other species by the two short white lines on disc of mesothorax, and black spot on the face.

10. **Pimpla novita**, n. sp.—♀.—Elongate, black, shining; large spot on each mandible, palpi and tegulæ, white; metathorax shining, with an oval discal depression, apex truncate; wings hyaline, iridescent, nervures and stigma brown, areolet subtriangular; legs short, rather slender, pale reddish-yellow, four anterior trochanters whitish, posterior tibiæ black, white at base and beneath nearly to apex, their tarsi black, basal half of first joint white; head and thorax smooth and polished; abdomen subfusiform, shining, very minutely sculptured, first segment with an oblong-ovate depression on disk; sheaths of ovipositor with long, dense pubescence. Length 4 lines.

Hab.—Massachusetts. Easily distinguished by the large white spot on each mandible, and by the ornamentation of posterior tibiæ.

11. **Pimpla indagatrix**, Walsh, MS.—♂.—Black, shining; palpi, scape beneath, tegulæ, four anterior legs and posterior trochanters, white; four anterior femora slightly tinged with yellow; posterior legs yellowish-red, their tibiæ white, with apex and narrow annulus near base, black; posterior tarsi black, two basal joints white tipped with black; wings hyaline, iridescent, nervures and stigma fuscous; areolet subrhomboidal; abdomen long, narrow, linear, minutely punctured, subpubescent, sometimes the segments are brownish or piceous at base. Length 2½ lines.

Hab.—Pennsylvania; Illinois. This is the smallest species so far known to me, and is easily distinguished by the characters given above.

12. **Pimpla annulicornis**, Walsh, MS.— ♀.— Black, shining; very narrow anterior orbits, tegulæ and apex of scutellums, white; palpi pale; antennæ pale luteous, with incisures of joints black; wings hyaline, stigma black, whitish at base, areolet small, subtriangular; legs yellowish-red, anterior coxæ black with apices pale; posterior tibiæ black with broad white annulus, three basal joints of their tarsi yellowish, with apices and two apical joints black; metathorax with short pale pubescence, bicarinate on disk; abdomen broad, very closely and deeply punctured, incisures deep, first segment bicarinate above. Length 5¼ lines.

The ♂ has white face, clypeus, mandibles, palpi, scape beneath, four anterior coxæ and base of legs beneath; wings beautifully iridescent, areolet minute; three basal joints of posterior tibiæ white tipped with black; abdomen very densely punctured and with short glittering white pile. Length 4½ lines.

Hab.—Pennsylvania, ♀; Illinois, ♂. Differs from *picticornis* by the immaculate mesothorax, different ornamentation of posterior legs and by the abdomen being more distinctly, less confusedly, punctured. The antennæ of both species are colored much alike.

14. **Pimpla incompleta**, n. sp.— ♀.—Black, shining; clypeus piceous; palpi whitish; antennæ rufo-testaceous, slender; head and thorax smooth and polished; wings hyaline, iridescent, nervures and stigma pale brown, areolet moderately large, 5-angular, the outer nervure entirely obliterated; legs yellowish-red; annulus on middle of intermediate tibiæ and base of tarsal joints, white; posterior tibiæ black, with a broad white annulus about the middle, their tarsal joints pale, tipped with black; abdomen broader than usual, closely punctured, with apical margins of segments smooth; on second and three following segments a transverse depression, deeper laterally and producing a transverse swelling which is more feebly punctured and more shining than the surrounding surface; the apical segments smooth and polished. Length 2½ lines.

Hab.—Illinois. A very small species, easily distinguished by the incomplete areolet of anterior wings. The shape and sculpture of the abdomen is similar to that of *pterelas*, Say, but proportionally broader, with the lateral swellings more prominent.

16. **Pimpla alboricta**, n. sp.— ♂.—Black, shining; clypeus, middle of mandibles, palpi, two basal joints of antennæ beneath, tegulæ, spot before, four anterior coxæ, all the trochanters and four anterior tibiæ and tarsi, white; posterior coxæ and all the femora yellowish-red; posterior tibiæ white, with spot near base and apical fourth black, as also tips of their femora; their tarsi black, the first, except tip, and base of remaining joints more or less, white; wings hyaline, iridescent, nervures and stigma black, areolet minute, petiolated, obliquely linear; head and thorax smooth and polished; mesothorax prominently trilobed anteriorly; metathorax with a central longitudinal channel; abdomen long and narrow, more or less tinged with brown, distinctly punctured, apical margins of segments smooth and polished, lateral swellings prominent, first segment with two prominent longitudinal carinæ, apical segment acuminate, smooth and shining. Length 3½—4 lines.

Hab.—Pennsylvania; Delaware. Readily distinguished from all

other species by having the entire clypeus, most of mandibles and two basal joints of antennæ beneath, white; and by the minute, almost obsolete, areolet of anterior wings.

17. **Pimpla rufopectus**, n. sp.—♀.—Black, shining; clypeus entirely, spot on mandibles, palpi, anterior orbits—dilated at summit, two dots beneath insertion of antennæ, tegulæ, line before, short line beneath, tip of scutellums, dot on each side of metathorax behind, anterior coxæ, four anterior trochanters, tibiæ and tarsi, and venter except lateral black spot on each segment, white; most of pleura, four posterior coxæ, all the femora, and posterior trochanters, yellowish-red; posterior tibiæ and tarsi whitish, spot near base of tibiæ, their apical fourth and tarsal tips, black; scutellum tinged with rufous; antennæ brown, pale at base beneath; wings hyaline, nervures blackish, base and apex of stigma pale, areolet obliquely subquadrangular; head and thorax shining; abdomen with close, distinct punctures, apical margin of segments smooth and polished, lateral swellings prominent; first segment short and deeply excavated at base which is smooth and polished; mesothorax prominent anteriorly; metathorax short, rounded above and truncate behind, sides with whitish pubescence; ovipositor short. Length 5 lines.

Hab.—Pennsylvania.

18. **Pimpla scriptifrons**, Walsh, MS.—♀.—Black, shining; clypeus except apex, narrow anterior orbits—broader at summit, palpi, tegulæ, line before, transverse spot beneath and tip of scutellums, white; antennæ brown, paler beneath, whitish at base beneath; wings hyaline, iridescent, stigma pale brown, whitish at base, areolet subtriangular, slightly oblique; legs slender, yellowish-red, anterior coxæ, all the trochanters, tips of intermediate femora, and their tibiæ except apex, white; posterior tibiæ white, with the apical fourth and a narrow annulus near base, black; intermediate tarsi white, the joints tipped with black, posterior pair black, with base of the joints white, apex of posterior femora black, edged with white; thorax smooth and polished; pleura beneath, before intermediate coxæ, reddish; abdomen shining, closely and confluently punctured, broad apical margin of segments smooth and polished, a median transverse depression on second and following segments, which are constricted at base; antennæ slender. Length 4 lines.

Hab.—Delaware; Illinois. Smaller and more slender than *rufopectus*, to which it is closely allied.

20. **Pimpla notanda**, n. sp.—♀.—Black, shining; palpi, tegulæ and short line before, white; antennæ short, black, apex reddish; a broad line on each side of mesothorax, scutellum, postscutellum, pleura except broad upper margin, and legs entirely, sanguineous; wings hyaline, nervures and stigma brown, areolet subtriangular, slightly oblique; abdomen long, with close, distinct punctures; ovipositor nearly as long as body; venter white, with lateral black spots. Length 4—5 lines.

♂. More slender, face black; metathorax with a red spot on each extreme lateral margin; anterior coxæ and trochanters white; posterior tibiæ and tarsi fuscous, the former with a white stripe behind, and the tarsi white at base of first joint; abdomen sometimes tinged with brown, the lateral swellings more prominent than in ♀. Length 3½—5 lines.

Hab.—Penn.; New Jersey; Colorado. Easily distinguished by the handsome ornamentation of the thorax.

21. **Pimpla rufovariata**, n. sp.—♀.—Black, shining; palpi and antennæ beneath, pale luteous; the incisures of latter blackish, upper surface brown; tegulæ pale; legs ferruginous, posterior tarsi paler, with tips blackish, tips of tibiæ also blackish; wings dusky hyaline, nervures and stigma black, areolet subtriangular; abdomen closely and confluently punctured, second, third and most of fourth segments sanguineous, with a short, black, transverse line on each side of apex, lateral swellings prominent; venter more or less sanguineous; head and thorax obsoletely punctured; metathorax rugulose, with prominent longitudinal carinæ; ovipositor one-fourth the length of abdomen. Length 4 lines.

Var. ♀.—Abdomen entirely sanguineous except apex, which is obfuscated, and the lateral black lines on apical margin. Length 2½ lines.

Hab.—Pennsylvania; New Jersey. Quite distinct from all the other known species of this genus.

POLYSPHINCTA, Grav.

The species of this genus have much the appearance of those of *Pimpla*, but may be at once separated by the absence of the areolet of anterior wing.

Only three species are known to me, which may be arranged as follows:

Abdomen punctured or rugulose.
  Posterior tibiæ white, biannulate with black; their tarsi black, white only at base of first joint.....1. **texana**, n. sp.
  Posterior tibiæ white, black only at apex; their tarsi white, black at tip of all the joints..... ..... 2. **Burgessii**, n. sp.
Abdomen polished, impunctured..... .....3. **limata**, n. sp.

1. **Polysphincta texana**, n. sp.—♀.—Black, shining; mouth rufo-piceous; palpi, tegulæ and dot before, whitish; wings hyaline, nervures and stigma black, the latter pale at base; legs yellowish-red; apex of anterior coxæ, four anterior trochanters and their tibiæ, anterior tarsi except tips, and base of intermediate tarsi, pale yellowish; intermediate tibiæ with a black spot behind near base, their tarsi except base fuscous; posterior tibiæ white, a narrow band near base, their apical fourth and a stripe within, not reaching their base, black; apex of their femora and their tarsi, except basal half of first joint which is white, also black; antennæ about three-fourths the length of the body, slender; face narrow; clypeus convex; eyes large, prominent, ovate; head and thorax polished; mesothorax prominently trilobed; scutellum raised, carinate laterally; metathorax rounded, densely clothed with pale pubescence; legs subrobust; abdomen elongate, rather robust, closely and distinctly punctured, more sparsely so on apical margin of the segments which are prominent, lateral swellings prominent and rounded, segments deeply incised at base, first segment deeply grooved at base, the groove converging to apex; apical segment short, blunt, obsoletely punctured; ovipositor very short; venter whitish, with lateral black spot on each segment. Length 5 lines.

Hab.—Texas.

2. **Polysphincta Burgessii**, n. sp.—♂.—Black, shining; palpi, tip of first and second (entirely) joints of antennæ beneath, tegulæ, dot before, four anterior

coxæ, all the trochanters, tips of four anterior femora, all the tibiæ (except apices of posterior pair which are black), and all their tarsi (except tips of intermediate pair which are pale brown and of posterior pair which are black), pale yellowish-white; wings hyaline, iridescent, nervures and stigma black, the latter large and with a pale dot at base; abdomen densely and minutely rugulose, with apical margins of segments smooth, lateral swellings prominent; first segment deeply grooved at base; scutellum rufo-piceous; metathorax with a central longitudinal channel; antennæ pale brown. Length 8 lines.

Hab.—Beverly, Mass. This beautiful little species is respectfully dedicated to my friend Mr. Edward Burgess, of Boston, to whom science is indebted for the discovery of many gems in Hymenoptera.

3. **Polysphincta limata**, n. sp.—♀.—Black, polished, impunctured; palpi, tegulæ and dot before, white; mandibles rufo-testaceous; antennæ nearly as long as body, slender, brown; scutellum and postscutellum rufous, the former blackish on disk; wings hyaline, irideseent, nervures and stigma brown; legs slender, yellowish-red; tips of anterior coxæ, all the trochanters, and more or less of four anterior tibiæ, pale yellowish; four posterior tarsi whitish, with the joints tipped with black; posterior tibiæ as in *texana*; tips of posterior femora blackish; metathorax with a rather deep, central, longitudinal channel; abdomen polished, impunctured, finely and sparsely pubescent, lateral swellings prominent, deeply grooved above, the groove converging to apex; ovipositor scarcely half the length of abdomen. Length 4 lines.

Var. ♀.—Scutellum and pleura pale rufous; the sub-basal black spot on posterior tibiæ wanting.

Hab.—Massachusetts; New Jersey. Readily distinguished by the polished, impunctured abdomen.

CLISTOPYGA, Grav.

Clistopyga annulipes, n. sp.—♀.—Black, shining; anterior orbits, extending slightly beyond summit of eyes, a transverse spot beneath insertion of each antenna and confluent with orbital line, clypeus entirely, mandibles except tips, spot beneath each eye, palpi, tegulæ, line before, spot beneath, tip of scutellum, spot on postscutellum, and very narrow apical margin of abdominal segments, white; remainder of scutellum pale rufous; wings hyaline, nervures and stigma piceous; legs pale ferruginous, four anterior coxæ and anterior legs in front, pale yellowish; four posterior tibiæ and tarsi black or blackish, the tibiæ with a narrow, white annulus about the middle, and the tarsal joints more or less white at base; antennæ long, slender, black above, brown beneath; pleura very finely and sparsely punctured; metathorax convex, with short, fine, pale glittering pubescence laterally, upper surface minutely transversely aciculated; legs short, subrobust, posterior tibiæ scarcely longer than the two basal joints of their tarsi; abdomen long, subrobust, convex, surface even, shining, finely and closely punctured, and with short, fine, erect pubescence; first segment excavated at base; apical segment truncate; ovipositor not half the length of abdomen, sheaths with long pubescence. Length 5½ lines.

Hab.—Massachusetts. One specimen with the mesothorax almost entirely destroyed.

GLYPTA, Grav.

This genus is known at once by the more or less deep oblique grooves on each side of the second, third and fourth dorsal segments of the abdomen, and the absence of the areolet of anterior wing; otherwise it closely resembles *Pimpla*.

The species are numerous and may be distinguished by the characters given in the following table.

Posterior tibiæ and tarsi banded with black and white.
  Pleura entirely black.
    Posterior tibiæ white, with two *entire* black bands; clypeus, ♀, black.....1. **tuberculifrons**, Walsh.
    Posterior tibiæ white, with two black bands *above*, and black stripe *beneath*.
      Mandibles black; clypeus dark rufous, piceous or black, ♀.....2. **varipes**, Cress.
      Mandibles, except tips, white; clypeus rufous or yellowish, ♂ ♀.....3. **erratica**, n. sp.
    Posterior tibiæ white, with two black bands *beneath* and black stripe *above*, ♀.....4. **inversa**, n. sp.
  Pleura more or less red.
    Scutellum entirely black; clypeus and mandibles white; posterior tibiæ white with two entire black bands; pleura with a small red spot on each side.....5. **pulchripes**, n. sp.
    Scutellum more or less red.
      Pleura black, with a longitudinal red mark or spot on each side; clypeus and mandibles rufous.....6. **rufiscutellaris**, Walsh.
      Pleura red only beneath between the four anterior coxæ; upper margin of prothorax white; posterior tibiæ with two *entire* black bands.....7. **animosa**, n. sp.
      Pleura, except space beneath wings, red.
        Abdomen entirely black.
          Posterior tibiæ with two black bands above and black stripe beneath; clypeus and mandibles white.....8. **vulgaris**, n. sp.
          Posterior tibiæ black, white only at base, pale fuscous in the middle; most of face white; form long and slender.9. **longiventris**, Walsh.
        Abdomen black, the three basal segments more or less red at apex.....10. **militaris**, n. sp.
      Pleura, mesothorax and scutellum reddish.
        Abdomen entirely black or fuscous.
          Legs reddish, posterior tibiæ and tarsi black and white; abdomen black.....11. **monita**, n. sp.
          Legs white, varied with blackish; abdomen fuscous. 12. **parva**, n. sp.
        Abdomen black with apical margin of each segment and a median dot white, also the face, mouth and orbits.....13. **scitula**, n. sp.
Posterior tiblæ and tarsi ferrugiuous or more or less blackish, not annulated with black and white.
  Abdomen entirely black.
    Scutellum with white spot; metathorax with large, coarse punctures.....14. **simplicipes**, Walsh.

Scutellum black.
Clypeus entirely black.....15. **rubripes**, n. sp.
Clypeus more or less rufous; posterior femora broadly black at apex, their tibiæ and tarsi black.....16. **canadensis**, n. sp.
Clypeus white; posterior tibiæ pale ferruginous, black only at apex.....17. **virginiensis**, n. sp.
Abdomen black, segments margined at apex with white: form short, robust, abdomen broad.....18. **albomarginata**, n. sp.
Abdomen black, more or less varied with rufous.
Apex of first and whole of second and third segments rufous.19. **macra**, n. sp.
Apical margin of second and third segments rufous.....20. **borealis**, n. sp.
Apex of first, second and third segments broadly rufous. 21. **rufofasciata**, n.s.
Abdomen entirely ferruginous or honey-yellow.
Thorax black; abdomen ferruginous.....22. **coloradensis**, n. sp.
Thorax and abdomen honey-yellow.....23. **Dakota**, n. sp.

1. **Glypta tuberculifrons**, Walsh, MS.—♀.—Black, shining; palpi, tegulæ and short line or spot before, whitish; antennæ rufo-testaceous beneath, base, apex, and above blackish; wings hyaline, faintly yellowish; legs including coxæ yellowish-red; anterior coxæ, trochanters and base of four anterior tibiæ, pale yellowish; tip of intermediate tibiæ and of posterior femora, black; posterior femora ferruginous, their tibiæ white, with black band at tip and one near base; four posterior tarsi black, more or less white at base; face with a median, smooth, rounded swelling; thorax and abdomen with small, close, distinct punctures, more sparse on pleura which is polished; metathorax with larger, rather sparse punctures and with well defined elevated lines, the flanks more or less rufous; abdomen broader than usual, the oblique lines deeply impressed; first segment with two distant longitudinal carinæ at base, becoming obsolete about the middle; venter fuscous, banded with yellowish; ovipositor about the length of abdomen. Length 6 lines.

♂.—Differs from ♀ only by having the face clothed with a rather dense, short, white pubescence; the flanks of the metathorax are black in the single specimen examined. Length 6 lines.

Hab.—Illinois. Readily distinguished by the black clypeus and mandibles and by the *entire* black bands on posterior tibiæ.

3. **Glypta erratica**, n. sp.—♀.—Black, shining; clypeus, mandibles except tips, palpi, tegulæ, and line before, whitish; antennæ brown-black, darker at base, apex and above; wings hyaline; legs, including coxæ, yellowish-red; trochanters whitish beneath, posterior pair blackish above; intermediate tarsi fuscous, pale at base of joints; base and apex of posterior femora blackish; their tibiæ black, with a white stripe *above* not reaching the apex and interrupted by a black spot near base, the tarsi black, more or less white at base of joints; face with a median rounded swelling; thorax minutely and closely punctured; metathorax rounded, smooth, shining, obsoletely punctured, apex enclosed by a well-defined arcuate carina; abdomen finely and densely punctured, the oblique lines deeply impressed, first segment with two sharply defined, longitudinal carinæ at base, becoming obsolete on middle; venter piceous; ovipositor as long as abdomen Length 4½ lines.

♂.—More slender than ♀; the metathorax above has two more or less distinct oblique carinæ, and the anterior coxæ are whitish. Length 4 lines.

Hab.—New York; Pennsylvania; Delaware; West Virginia. A common species.

4. **Glypta inversa**, n. sp.—♀.—More slender and smoother than *erratica;* the posterior tibiæ white, with a black band at apex and one near base, connected *above* by a slender black line; abdomen narrower and less deeply and closely punctured than that of *erratica;* otherwise the same. Length 4½ lines.

Hab.—Massachusetts.

5. **Glypta pulchripes**, n. sp.—♀.—Black, shining; clypeus, mandibles except tips, palpi, tegulæ and dot before, white; antennæ brown above, pale rufo-testaceous beneath, basal joint blackish; wings hyaline, beautifully iridescent; anterior coxæ, intermediate pair beneath, the trochanters, and most of four anterior legs, white; four anterior femora toward apex and intermediate coxæ behind, yellowish; intermediate tibiæ biannulate with pale fuscous; posterior coxæ and femora bright orange-yellow, the latter narrowly black at base and apex, their tibiæ white, with two *entire* black bands, one near base and the other at apex, their tarsal joints annulated with black and white; on each side of pleura a small red spot; face slightly prominent medially; head and thorax closely and delicately punctured; metathorax rounded, truncate behind: abdomen shining, distinctly punctured except at base and apex, the oblique lines deeply impressed; venter white; ovipositor rather longer than abdomen. Length 3 lines.

Hab.—West Virginia. This may be the (*Anomalon*) *divaricata* of Say.

6. **Glypta rufiscutellaris**, Walsh, MS.—♀.—Black, shining; clypeus and mandibles sometimes tinged with rufous; palpi pale; antennæ bright rufo testaceous, brown above and at base and apex beneath, second joint beneath pale; tegulæ, a spot or line before, anterior coxæ, intermediate pair beneath, four anterior trochanters, second joint of posterior pair, and four anterior tibiæ except apex, whitish; four anterior tarsi pale, with tips of joints yellowish; posterior tibiæ white, with a black band at apex and a spot near base, connected *beneath* by a slender black line; posterior tarsi black, basal half of first three joints white; remainder of legs yellowish-red; wings hyaline, iridescent; apex of scutellum, more or less, flanks of metathorax, and a longitudinal, slightly oblique mark or spot on each side of pleura, red; face with rather dense, short, white pubescence, and with a rather prominent, polished tubercle on the middle; thorax closely, delicately though distinctly punctured; metathorax rounded above, sparsely punctured, with two longitudinal, diverging carinæ on the disk, the apex truncate and bounded above by a well-defined, arcuate carina, the sides having a patch of short, pale pubescence; abdomen closely and distinctly punctured, more sparse on basal segment, the oblique lines deeply impressed, sides and apex slightly pubescent; longitudinal carinæ on first segment very prominent at base, becoming obsolete before apex: venter more or less pale; ovipositor as long as the abdomen. Length 3½—4½ lines.

The ♂ has the antennæ, except basal joint, entirely pale fulvous; the legs much paler than in ♀, the median swelling of face more prominent, and the flanks of metathorax entirely black; abdomen narrower and more opaque than in ♀; venter white. Length 3½ lines.

Hab.—Connecticut; New Jersey; Illinois. Only one ♂ specimen

observed. Easily recognised by the rufous scutellum and black mouth.

7. **Glypta animosa**, n. sp.—♀—Resembles *rufiscutellaris*, but more robust, the anterior margin, only, of clypeus, spot on mandibles, tip of scape beneath and upper margin of prothorax, are white; scutellum convex and entirely red, as also is the pleura beneath and partly on the sides; the black bands on posterior tibiæ are *entire* and not connected beneath by a black line; abdomen more robust and more densely punctured; ovipositor longer than the entire body; otherwise as in *rufiscutellaris*. Length 4 lines.

Hab.—New York.

8. **Glypta vulgaris**, n. sp.—♂ ♀.—Differs from *rufiscutellaris* as follows:—Clypeus and mandibles, except tips, white; scutellum entirely, and pleura except narrow space beneath wings, red; abdomen more closely and minutely punctured; all the coxæ yellowish-red, the posterior femora black at tips. Length 3—4 lines.

Hab.—Eastern and Middle States. This is our commonest species and is readily distinguished by the red pleura and scutellum, and white mouth.

9. **Glypta longiventris**, Walsh, MS.—♂.—Black, somewhat shining; face, except prominent median swelling, clypeus, mandibles except tips, space between eyes and base of mandibles, palpi, scape beneath, tegulæ, and upper and lower margins of prothorax, white; antennæ reddish-brown, darker above; pleura, except space beneath wings, flanks of metathorax and most of legs, yellowish-red; pleura beneath tinged with yellowish; wings hyaline, iridescent; anterior coxæ, intermediate pair beneath, and all the trochanters, white; intermediate tibiæ obfuscated above the middle and at tip; posterior femora black at apex and slightly so at base; their tibiæ black, pale fuscous on the middle and with a narrow white annulus at base, their tarsi black, with base of joints narrowly pale; mesothorax sub-trilobate, delicately punctured, shining; metathorax rounded, with the carinæ obsolete, except the arcuate one enclosing the apex; posterior legs longer and more slender than usual; abdomen long, slender, subcylindrical, densely and confluently punctured, the oblique lines deeply impressed. Length 4 lines.

Hab.—Illinois. One specimen.

10. **Glypta militaris**, n. sp.—♀.—Black shining, with a very short pale pubescence; clypeus, mandibles, palpi, scutellum, post-scutellum, pleura except space beneath wings, flanks of metathorax, most of legs, first abdominal segment, except fuscous stains on the sides, and broad apical margin of second and third segments, sanguineous; tegulæ and dot before, whitish; wings hyaline, faintly dusky at apex; anterior coxæ, four anterior trochanters, extreme apex of their femora, and anterior tibiæ in front, yellowish-white; tips of posterior femora black; their tibiæ white, with a black band at apex and a narrow one near base; their tarsi black, basal half of first three joints white; antennæ obscure ferruginous, darker above, scape black; face with a rather prominent, smooth swelling; thorax and abdomen closely and distinctly punctured; metathorax with well-defined, elevated lines; abdomen shining at apex, the oblique lines deeply impressed; first segment with two longitudinal carinæ

very prominent at base but obsolete beyond the middle; venter whitish; ovipositor rather shorter than abdomen. Length 4 lines.

Hab.—Illinois. Readily known by the three red bands on abdomen.

11. **Glypta monita**, n. sp.—♀.—Black; clypeus, mandibles, palpi, tegulæ, line before, anterior coxæ, all the trochanters, and apex of all the femora, white; antennæ black above, brown beneath, scape beneath reddish; wings hyaline, iridescent: metathorax, scutellum, pleura, flanks of metathorax, and most of legs, sanguineous; four posterior tibiæ white, with a black or fuscous band at apex and a narrow one near base, connected beneath by a slender black or fuscous line; their tarsi annulated with black and white; face with a prominent, smooth, median swelling; mesothorax feebly punctured; metathorax with tolerably well-defined elevated lines, the punctures distinct, the apex truncate, rugulose and bounded above by a very prominent, sharp, areuate carina; abdomen very densely punctured, opaque, the oblique lines deeply impressed, apex smooth and shining; first segment less densely punctured at base and shining, the longitudinal carinæ flattened and polished; venter white; ovipositor as long as abdomen. Length 3 lines.

Hab.—West Virginia. A very distinct species.

12. **Glypta? parva**, n. sp.—♀.—Small, slender; head large, black, polished; eyes large, ovate, prominent; palpi whitish; antennæ long, slender, fuscous, white at base beneath; prothorax piceous, lower margin whitish; mesothorax, scutellums and pleura honey-yellow; tegulæ and spot before, white; metathorax black, feebly sculptured, flanks rufous, polished; mesothorax trilobate, smooth and polished; wings hyaline, beautifully iridescent; the second or terminal submarginal cell acutely pointed within, the second recurrent nervure much rounded outwardly; legs long, slender, white; anterior pair tinged with pale yellowish; base of posterior coxæ above, base of their femora, a line on outer side, base and apex of their tibiæ, and their tarsi except basal half of first joint, fuscous; abdomen delicately punctured, rufo-fuscous, blackish at base of first segment, on middle of third, fourth and fifth segments and apex; the grooves on second, third and fourth segments deeply impressed, twice oblique or angulate laterally, so that they enclose a rhomboidal space on the middle of the segment; apical segments smooth and polished; venter whitish; ovipositor short, scarcely as long as the two basal segments of abdomen, acutely sub-lanceolate. Length 2 lines.

Hab.—Illinois. This is not a true *Glypta*, differing in the neuration of anterior wing and in the sculpturing of the abdomen.

13. **Glypta scitula**, n. sp.—♀.—Small, robust, black, shining; face entirely, clypeus, mandibles except tips, palpi, orbits broadly dilated posteriorly toward the mouth, apex of scape beneath, margins of prothorax broadly interrupted above in front, tegulæ, short line beneath, sides and apex of scutellum, and transverse spot on postscutellum, white; antennæ black above, pale testaceous beneath; mesothorax yellowish-red, with a large quadrate black spot on the middle of anterior half, reaching anterior margin, and an elongate blackish stain on each side over the tegulæ; the anterior lateral margin suddenly dilated anteriorly on each side of black spot, and two slender longitudinal stripes becoming obsolete beyond the middle, white; scutellum above, pleura, flanks

of metathorax and also the apex enclosing a black spot, yellowish-red; wings hyaline, beautifully iridescent; four anterior coxæ; apical half of posterior pair, all the trochanters, apex of four anterior femora, and their tibiæ, white; remainder of four anterior femora pale-yellowish; posterior femora yellowish-red; base of posterior coxæ, base and apex of their femora, apex of their tibiæ, spot above near base, and their tarsi except base, black: remainder of their tibiæ and basal half of first tarsal joint, white; abdomen broad, feebly punctured, black, shining, the oblique lines not deeply impressed; apical margin, dilated laterally, of all the segments, lateral margin of each segment, dilated into a spot at base, and a small round spot on the middle of the first four segments, all white; venter whitish; ovipositor about three-fourths the length of the abdomen. Length 3 lines.

Hab.—New Jersey. This is a lovely little species, with the colors remarkably bright and varied.

14. **Glypta simplicipes**, Walsh MS.—♀.—Black; clypeus, mandibles except tips, palpi, tegulæ, line before and spot on scutellum, yellowish-white; antennæ brown-black, paler beneath except base; legs, including coxæ, reddish-yellow, posterior pair darker, their tibiæ except base and their tarsi more or less, blackish; wings hyaline, faintly dusky; surface of body densely punctured, confluently so on abdomen, and with a short, pale, glittering pile; face scarcely prominent medially; metathorax rounded, coarsely punctured, with distinct elevated lines; abdomen robust, broader than usual, the oblique lines very deeply impressed, making the basal corners of the segments very prominent; apical margin of fourth and remaining segments smooth and polished; venter whitish; ovipositor nearly as long as abdomen. Length 5 lines.

The ♂ has the four anterior legs in front, and their coxæ and trochanters yellowish-white, and the pleura is sometimes more or less reddish, as is also the flanks of metathorax: in one specimen, probably immature, the entire body is varied with pale ferruginous. Length 4½—5 lines.

Hab.—Mass.; N. Y.; Illinois. This is one of our most common species, and is easily distinguished from all others having the posterior legs *not* annulated with black and white, by the broad abdomen, white mouth and spot on scutellum.

15. **Glypta rubripes**, n. sp.—♀.—Deep black, shining, with a very short, pale, glittering pile; clypeus and mandibles nigro-piceous; palpi pale fuscous; legs, including coxæ, reddish-yellow; posterior tibiæ, except base, and their tarsi, black; wings hyaline, faintly dusky; venter whitish; face minutely, not very densely punctured, with a median swelling; thorax densely and finely punctured; metathorax more coarsely punctured, with well defined elevated lines, apex subtruncate, bounded above by an arcuate carina; abdomen long, rather narrow, with fine, close, distinct punctures, the three apical segments smooth and polished, the oblique lines deeply impressed; basal segment with two distant longitudinal carinæ at base; ovipositor as long as the body. Length 5 lines.

♂.—More slender, less shining, the abdomen very densely punctured and opaque. Length 4½ lines.

Hab.—Canada.

16. **Glypta canadensis**, n. sp.—♀.—Black, shining; head and thorax with a short, fine, pale pile; clypeus, mandibles, tegulæ and palpi, rufo-testaceous; antennæ yellowish-brown; legs, including coxæ, reddish-yellow; posterior trochanters, apical fourth of their femora, their tibiæ, except narrow pale annulus at base, and their tarsi, black; wings hyaline, iridescent; head, thorax and abdomen closely and finely punctured; face slightly prominent medially; pleura and metathorax sparsely punctured, polished, the latter rounded, with prominent elevated lines; abdomen not strongly punctured, the oblique lines feebly impressed, obsoletely so on fourth segment; apical segments scarcely sculptured; venter whitish; ovipositor as long as abdomen. Length 3½ lines.

Hab.—Ontario, Canada. Easily distinguished by the tips of posterior femora being broadly black, and by the feebly impressed oblique lines on abdomen.

17. **Glypta virginiensis**, n. sp.—♀.—Black, shining; clypeus, most of mandibles, palpi and tegulæ, whitish; antennæ reddish-brown, fuscous above; legs, including coxæ, reddish-yellow, two anterior pair paler in front; extreme tips of posterior femora, spot near base of their tibiæ, their apices, and their tarsi, except base of joints, blackish; wings hyaline, iridescent, faintly yellowish; face minutely punctured, longitudinally prominent medially; mesothorax, pleura and sides of metathorax with close, distinct punctures; metathorax above with scattered punctures, apex enclosed by a sharply defined arcuate carina; abdomen very densely punctured, the median triangular space on second, third and fourth segments, formed by the deeply impressed oblique lines, smooth and polished, with scattered punctures only on the sides and anterior corner; apical segments smooth and polished; first segment rugulose laterally, the disk minutely, longitudinally aciculate, the longitudinal carinæ very prominent at base, but obsolete at tip; venter whitish; ovipositor as long as abdomen. Length 3½ lines.

Hab.—West Virginia. Remarkable for the smooth and polished triangular spaces on the abdomen.

18. **Glypta albomarginata**, n. sp.—♀.—Short, robust, black, shining, with a short pale pubescence; rather broad entire orbits, clypeus, mandibles, palpi, tegulæ, line before, line beneath, two lines on mesothorax, dilated anteriorly, lateral and apical margin of scutellum, line behind on postscutellum, narrow apical margin of all the segments of abdomen and lateral margins of first segment, white; antennæ brown at tips; wings hyaline, beautifully iridescent; flanks of metathorax, and legs, orange-yellow; four anterior coxæ black, pale at tips; dot at apex of posterior coxæ, their trochanters, narrow annulus on apex of their femora, tips of their tibiæ, a space near their base, and their tarsi entirely, black; extreme tips of their femora and base of their tibiæ, whitish; venter whitish; metathorax rounded, with distinct punctures; scutellum elevated at apex, flattened above; legs short, robust; abdomen short, broad, robust, the segments short and transverse, the oblique lines tolerably well impressed; ovipositor about as long as abdomen, yellowish, lanceolate at apex, sheaths black, with long pubescence, apex yellowish-red. Length 3 lines.

Hab.—Maine. This has the same form as *G. scitula*, described above.

19. **Glypta macra**, n. sp.—♀.—Elongate, slender, black, shining; clypeus, mandibles, palpi and tegulæ, yellow; antennæ brown, paler beneath; wings subhyaline; legs, including coxæ, sanguineous, apical third of posterior femora and their tibiæ and tarsi, black or blackish; apical third of first segment of abdomen, the whole of second, and the third, except some fuscous stains, sanguineous; face with a median smooth swelling; metathorax rounded, the elevated lines sharply defined on the sides and apex, obsolete on the disk; abdomen smooth and shining, scarcely punctured, the oblique lines deeply impressed; venter whitish; ovipositor as long as abdomen. Length 4¼ lines.

Hab.—Canada. A very distinct species.

20. **Glypta borealis**, n. sp.—♂.—Slender, black, shining; clypeus rufous; palpi, tegulæ and dot before, yellowish; antennæ ferruginous, darker above, scape yellowish beneath; wings faintly dusky, iridescent; legs, including coxæ, reddish-yellow; anterior coxæ in front, and four anterior trochanters, yellowish, tips of posterior tibiæ and of their tarsi, fuscous; narrow apical margin of second and third abdominal segments, rufous; face with a prominent median swelling; thorax densely and minutely punctured; metathorax more coarsely punctured, the apex enclosed by a sharply defined arcuate carina; abdomen densely punctured, apex smooth and shining, with a glittering pubescence; first segment sharply bicarinate on basal half, oblique lines deeply impressed; venter whitish. Length 4 lines.

Hab.—Canada.

21. **Glypta rufofasciata**, n. sp.—♂.—Slender, black, subopaque; clypeus, mandibles, palpi and tegulæ, yellowish; antennæ black above, reddish-brown beneath, scape entirely black; wings hyaline, iridescent, nervures pale brown, stigma luteous; legs, including coxæ, reddish-yellow, anterior pair paler, apex of posterior femora, tips of their tibiæ, and their tarsi, more or less paler at base of joints, black; their tibiæ with a pale annulus at base, beneath which there is a fuscous band; apical third of first segment of abdomen, and apical half of second and third segments, bright rufous; metathorax with well defined elevated lines; abdomen densely punctured, apex smooth and polished, the oblique lines deeply impressed, first segment bicarinate on basal half; venter white. Length 4 lines.

Hab.—Illinois. A beautiful species.

22. **Glypta coloradensis**, n. sp.—♂.—Elongate, narrow; head, thorax and two apical segments of abdomen, black; clypeus, mandibles except tips, palpi, tegulæ, four anterior coxæ and trochanters, and venter, pale lemon-yellow; antennæ blackish above, pale testaceous beneath; wings hyaline, iridescent; posterior knees, tips of their tibiæ and most of their tarsi, blackish; remainder of legs and abdomen above, except apex, ferruginous; oblique lines of abdomen deeply impressed. Length 5 lines.

Hab.—Colorado.

23. **Glypta Dakota**, n. sp.—♀.—Pale ferruginous or honey-yellow, shining; head black; clypeus, mandibles, palpi, tegulæ and dot before, whitish; antennæ brown, darker above, scape beneath ferruginous; wings faintly dusky, stigma luteous; base of posterior tibiæ whitish, their tips and tarsi obfuscated; abdomen rather broader than usual, finely punctured, the oblique lines deeply impressed; venter whitish; ovipositor nearly as long as abdomen, sheaths black. Length 4 lines.

The ♂ has the face and space beneath eyes, ferruginous; otherwise like the ♀. Length 3¼ lines.

Hab.—Dakota.

SCHIZOPYGA, Grav.

Schizopyga frigida, n. sp.—♀. Black; mandibles, palpi, scape beneath and tegulæ, whitish; antennæ pale luteous beneath, fuscous above; face slightly raised and flattened, opaque, front excavated, smooth and polished, as also is the occiput, cheeks and thorax; wings hyaline, iridescent; legs short, robust, honey-yellow; four anterior coxæ and trochanters pale yellow; tips of intermediate tibiæ and of their tarsi, tips of posterior femora, their tibiæ, except base and broad white annulus about the middle, and their tarsi, except base, black; all the femora swollen; abdomen entirely black, somewhat shining, minutely sculptured, the segments with lateral swellings most prominent on basal segments.

Hab.—Hudson's Bay Territory.

ARENETRA, Holmgren.

This genus is easily distinguished from *Lampronota*, by the head (especially,) and thorax being clothed with a dense, rather long, pubescence. The species may be separated as follows:—

Head and thorax clothed with black pubescence.....1. **canadensis**. Cress.
Head and thorax clothed with whitish pubescence.
  Tegulæ black.
    Posterior femora black.....2. **nigrita**. Walsh.
    Posterior femora ferruginous.....3. **rufipes**. n. sp.
  Tegulæ yellowish-white.....4. **ventralis**. n. sp.

2. **Arenetra nigrita**. Walsh, MS.—♀.—Black, head and thorax opaque, abdomen except base shining; head, thorax and femora beneath with whitish pubescence, most dense on face and cheeks; head and thorax coarsely and rather closely punctured; wings tinged with fuscous, nervures and stigma black; anterior femora reddish-brown within, all the tibiæ and tarsi more or less fuscous, tarsi paler; abdomen shining, impunctured; first segment transversely depressed before apex and minutely, longitudinally aciculated, the base deeply excavated; venter black; ovipositor about half as long as abdomen. Length 5—5½ lines.

The ♂ has the pubescence longer and much more dense; the wings clearer and all the knees, tibiæ and tarsi yellow or reddish-yellow; the first segment of abdomen much narrower, minutely, transversely rugulose, with a short tubercle on each side between middle and base; narrow lateral and apical margins of the second and following segments often more or less pale. Length 4½—5 lines.

Hab.—Canada; Massachusetts. Closely allied to *canadensis*, from which it is at once distinguished by the pubescence being whitish and not black.

3. **Arenetra rufipes**, n. sp.—♀.—Differs from *nigrita* as follows:—The knees, tibiæ and tarsi, and also the posterior femora, except base, are ferruginous; the basal segment of abdomen is minutely rugulose, but not aciculated before apex as in *nigrita*; and the third and following segments have a very narrow yel-

low apical margin; the ovipositor is as long as the abdomen. Length 5 lines.

Hab.—Maine. In the single specimen before me, the second segment of abdomen is deeply and symmetrically emarginate on each side, which however may be a deformity.

4. **Arenetra ventralis**, n. sp.—♂.—Differs from *nigrita* as follows:—More robust; *tegulæ yellowish-white;* first abdominal segment broader, with subobsolete lateral tubercles; anterior half of venter yellowish. Length 5½ lines.

Hab.—New York; Pennsylvania.

CYLLOCERIA, Schiödte.

This genus is easily recognized by the ♂ antennæ having the fifth and sixth joints erose, the former at apex and the latter at base. The anterior wing has no areolet.

Cylloceria occidentalis, n. sp.—♀.—Black, shining; palpi yellowish; antennæ varies from reddish-brown to piceous; tegulæ white; wings faintly dusky, iridescent; legs, including coxæ, reddish-yellow; posterior tibiæ and tarsi black; mesothorax prominently trilobate; metathorax opaque, minutely rugulose, with pale pubescence, and with two approximate, discal, longitudinal carinæ; the three or four basal segments of abdomen densely rugulose, coarsely so on first segment, smooth and shining at apex; apical segments smooth and polished, and the posterior margin of the segments sometimes more or less reddish; venter whitish at base; ovipositor as long as abdomen. Length 3½—5 lines.

♂.—More slender, and polished, with only the first segment of abdomen rugose, and which segment has a prominent tubercle on each side before middle. Length 3½—4 lines.

Hab.—Conn., Penn., West Va., Illinois.

LAMPRONOTA, Curtis.

Abdomen black.
- Posterior coxæ red.
  - Pleura with a yellow or reddish mark on each side before middle coxa; scutellum more or less white on each side.
    - Large; areolet small, petiolated.
      - Abdomen coarsely punctured.....1. **occidentalis**, n. sp.
      - Abdomen minutely punctured.....2. **scutellaris**, n. sp.
    - Small; areolet larger, not petiolated.....3. **pleuralis**, n. sp.
  - Pleura entirely white; scutellum with a white spot on each side.....4. **pulchella**, n. sp.
  - Pleura and scutellum entirely black.
    - Abdomen smooth and shining.....5. **lævigata**, n. sp.
    - Abdomen punctured.
      - Lateral margin of mesothorax, before tegulæ, more or less yellow.
        - Posterior femora broadly black at tips.....6. **jocosa**, n. sp.
        - Posterior femora not black at tips.
          - Medium; abdominal segments entirely black.....7. **insita**, n. sp.
          - Small; apical margin of second and third abdominal segments narrowly yellowish.....8. **parva**, n. sp.
      - Mesothorax black, immaculate.....9. **punctata**, n. sp.

Posterior coxæ entirely black.
Medium; posterior legs black except broad white annulus at base of their tibiæ; face and tegulæ white.....10. **tegularis**, n. sp.
Medium; posterior legs black, their femora red; face and tegulæ black.....11. **rufipes**, Cress.
Small; posterior legs, except coxæ and tarsi red.....12. **macra**, n. sp.
Abdomen red or yellow and black.
Base and apex of abdomen black.
Legs pale yellow, posterior femora and tarsi black; scutellum more or less yellow.....13. **varia**, n. sp.
Legs red; scutellum black.....14. **frigida**, Cress.
Base only of abdomen black.
Legs entirely black.....15. **americana**, n. sp.
Only the femora red.....16. **montana**, Cress.
Legs entirely red; mesothorax reddish.....17. **exigua**, n. sp.
Apex only of abdomen black.....18. **agilis**, n. sp.
Abdomen entirely red; thorax black.
Scutellum black.....19. **exilis**, n. sp.
Scutellum more or less yellow.....20. **rubrica**, n. sp.
Body entirely ferruginous.
Abdomen opaque, densely punctured.....21. **brunnea**, Cress.
Abdomen smooth and polished.....22. **coloradensis**, n. sp.

1. **Lampronota occidentalis**, n. sp.—♀.—Black, opaque, densely punctured; clypeus, mandibles except tips, anterior orbits above antennæ, tegulæ, two spots beneath, broad line on each side of mesothorax before wings, dilated anteriorly, and two spots on scutellum, white; an elongate mark on each side of pleura before middle coxa, and the lower margin of flanks of metathorax, rufous: sides of pleura and flanks of metathorax polished; wings hyaline, areolet small, petiolated; legs ferruginous; anterior coxæ, four trochanters, extreme tips of their femora and base of all the tibiæ, pale yellowish; tips of posterior femora, more or less, the tibiæ except base, and their tarsi, blackish; abdomen densely and strongly punctured, apex smooth and shining; ovipositor as long as body. Length 6—6½ lines.

Hab.—Pennsylvania. This is our largest species.

2. **Lampronota scutellaris**, n. sp.—♀.—Black, subopaque, very densely and minutely punctured; clypeus, mandibles, palpi, anterior orbits, tegulæ, broad line before, short line beneath, two lines on scutellum, and elongate mark on each side of pleura before middle coxa, yellowish-white; disk of scutellum sometimes ferruginous; wings faintly tinged with yellowish-fuscous; areolet small, petiolated; metathorax coarsely rugose centrally; pleura and flanks of metathorax more or less reddish beneath; legs ferruginous, four anterior coxæ, trochanters and knees, more or less yellowish; apex of posterior femora, of their tibiæ and their tarsi, fuscous or black; extreme base of posterior tibiæ pale; abdomen somewhat shining, with a short, fine, whitish pile at apex, very minutely sculptured; ovipositor as long as abdomen. Length 5½—6 lines.

Hab.—West Virginia; Illinois.

3. **Lampronota pleuralis**, n. sp.—♀.—Differs from *occidentalis* by being much smaller, by the mark on each side of pleura being yellow or white, instead of

rufous, and by the areolet of anterior wing being larger and scarcely at all petiolated. Length 4 lines.

♂.—Slender, black, opaque; face entirely, extending beneath eyes, clypeus, mandibles, palpi, anterior orbits interrupted before summit, apex of first joint of antennæ beneath, spot on second joint, a cuneiform spot or line on each side of mesothorax, tegulæ, two marks beneath, occasionally a spot on each side of scutellum, lower margin of prothorax, a large, irregular mark on each side of pleura before middle coxa, sometimes meeting beneath, and four anterior coxæ and trochanters, yellowish-white; metathorax densely rugose; wings faintly yellowish-fuscous, areolet larger than usual, subtriangular, not petiolated; legs pale ferruginous, posterior tibiæ and tarsi more or less fuscous; abdomen narrow, slender, shining at apex, apical margin of second and third segments sometimes reddish; venter yellowish. Length 3—4 lines.

Hab.—Canada; Mass., N. Y., Del., W. Va., Pa., Ill. A common species.

4. **Lampronota pulchella**, n. sp.—♂.—Black, somewhat shining, finely and closely punctured; face entirely, extending beneath eyes, clypeus, mandibles, palpi, anterior orbits, scape beneath, tegulæ, mark beneath, hooked line in front, two spots at base of scutellum, and pleura, except broad upper margin, white; antennæ as long as body, brown-black above, pale rufo-testaceous beneath; spot on flanks of metathorax rufous; wings hyaline, iridescent, areolet small, petiolated; four anterior legs white, intermediate femora yellowish; posterior legs honey-yellow, trochanters and tibiæ whitish, apex of tibiæ and tarsi black; abdomen long and slender; venter whitish. Length 5 lines.

Hab.—New Jersey. A very pretty species, easily recognized by the white pleura.

5. **Lampronota lævigata**, n. sp.—Black, shining; head and thorax closely and finely punctured; abdomen smooth and shining; clypeus, mandibles, palpi, tegulæ and legs, yellowish-red; posterior tibiæ except base, and tarsi, blackish; wings hyaline, areolet small, petiolated; antennæ brown-black; metathorax densely rugulose; abdomen convex, subsessile; ovipostor longer than body. Length 5 lines.

Hab.—Canada.

6. **Lampronota? jocosa**, n. sp.—♂.—Black; sides of face (narrowed beneath and leaving a large triangular black mark on middle) extending beneath eyes and acutely notched beneath insertion of each antenna, dot at summit of each eye, clypeus, spot on mandibles, spot on scape beneath, tegulæ, spot beneath, and broad hooked line in front on each side of mesothorax, white; wings hyaline, iridescent, areolet subtriangular, not petiolated; antennæ brown-black; legs ferruginous, apical third of posterior femora, their tibiæ and tarsi, black; abdomen depressed, subpetiolate, gradually broader to apex. Length 3½ lines.

Hab.—Illinois. Not a true *Lampronota*.

7. **Lampronota insita**, n. sp.—♀.—Black, rather shining, closely and finely punctured; clypeus, mandibles and anterior orbits above antennæ, roseate or flesh-color; palpi whitish; antennæ nearly as long as body, slender; tegulæ, spot beneath, and a broad, somewhat hooked line before, on each side of mesothorax, white; wings hyaline, areolet triangular, not petiolated; legs honey-

yellow; anterior coxæ, four anterior trochanters and base of posterior tibiæ, white; posterior tibiæ except base and their tarsi, black; three basal segments of abdomen closely and strongly punctured, apical segments smooth and shining; venter whitish. Length 4½ lines.

Hab.—New Jersey.

8. **Lampronota parva**, n. sp.—♀.—Small, black, opaque; clypeus, mandibles, palpi, dot at summit of each eye, tegulæ, narrow line before, on each side of mesothorax (sometimes obsolete or wanting), anterior coxæ behind, their trochanters and spot on intermediate coxæ beneath, white; wings hyaline, iridescent, areolet opaque, sub-petiolated; legs ferruginous, tips of posterior tibiæ and their tarsi more or less, fuscous; abdomen shorter and broader than usual, depressed, densely and finely punctured, shining at apex, apical margin of second and third segments narrowly yellowish, sometimes obsoletely so; venter yellowish, ovipositor as long as abdomen. Length 2½—3 lines.

Hab.—Canada; Del., West Va.

9. **Lampronota punctulata**, n. sp.—♀.—Small, black, opaque, densely and finely punctured; clypeus, mandibles and palpi pale reddish; dot at summit of each eye, and tegulæ, white; wings hyaline, sometimes faintly dusky; areolet subtriangular, not petiolated; legs pale ferruginous, posterior tibiæ and tarsi more or less fuscous; metathorax densely rugulose; abdomen long, narrow, densely and minutely punctured, terminal margin of the segments and the two or three apical segments smooth and polished; apical margin of second and third segments sometimes narrowly yellowish; venter whitish; ovipositor as long as abdomen. Length 3—4 lines.

Hab.—Canada; Mass., Conn., West Va.

10. **Lampronota tegularis**, n. sp.—♂.—Long, slender, black, shining; face, clypeus, mandibles, palpi, scape beneath and tegulæ, white; antennæ brown beneath, except base; pleura smooth and polished; metathorax coarsely punctured; wings hyaline, iridescent, faintly dusky at tips, areolet minute, petiolated; four anterior legs, including coxæ, and basal half of posterior tibiæ, white; four anterior femora and apical half of their tibiæ, honey-yellow, remainder of posterior legs black; abdomen long, narrow, with close distinct punctures, the two or three apical segments smooth and shining. Length 5½—6 lines.

Hab.—Canada; Penn., Del., Ills. A very distinct and well marked species.

12. **Lampronota macra**, n. sp.—♂.—Small, slender, black, opaque; narrow anterior orbits below antennæ, space beneath eyes, spots at summit of each eye, clypeus, mandibles, palpi, tegulæ, mark beneath and line before on each side of mesothorax, white; wings hyaline, iridescent, areolet triangular, petiolated; legs honey yellow; anterior coxæ entirely and intermediate pair, except black spot at base beneath and above, white; posterior coxæ and their trochanters above, black, posterior tarsi fuscous; abdomen with incisures between second, third and fourth segments reddish. Length 3½ lines.

Hab.—Delaware. This has, at first sight, much the appearance of *pleuralis* ♂, but is quite distinct.

13. **Lampronota varia**, n. sp.—♂.—Black, shining; face, clypeus, mandibles, palpi, space beneath eyes, anterior orbits, occasionally interrupted, sometimes spot behind eyes, scape beneath and spot above, upper and lower margins of prothorax, two longitudinal lines on disk of mesothorax, sometimes obsolete or wanting, broad lateral margin confluent anteriorly with discal lines, tegulæ, one or two spot beneath, more or less of scutellum, irregular mark on each side of pleura before middle coxa, sometimes wanting, four anterior legs including coxæ, posterior coxæ, except more or less of base beneath, their trochanters, knees and tibiæ except tips, pale yellow, posterior tarsi fuscous; antennæ as long as body, brown beneath; wings yellowish-hyaline, areolet small, petiolated; abdomen sub-cylindrical, shining, first segment, except apex, and the fifth and following segments, black; remainder yellow varied with ferruginous, or vice versa, sometimes varied with dusky, sometimes yellowish-ferruginous margined at apex with whitish; venter yellowish. Length 6 lines.

Var.—♂.—Face with a central black line; antennæ entirely black; venter and pleura immaculate; scutellum with two narrow white lines; posterior coxæ entirely black; apex of first segment of abdomen, and the second, third and fourth segments entirely, uniformly ferruginous. Length 5¾ lines.

Hab.—Canada; Mass., Conn., West Va. A common and very variable species, easily distinguished from all others by the coloration of the legs.

15. **Lampronota americana**, n. sp.—♀.—Black; clypeus and anterior legs tinged with rufous; wings fusco-hyaline, areolet slightly petiolated; abdomen smooth and shining, rufous, first segment except apex black; ovipositor as long as body. Length 6 lines.

Hab.—Canada; West Va., Ills. This species mimics *Cryptus americanus* in color.

17. **Lampronota exigua**, n. sp.—♀.—Small; head and thorax black; clypeus, mandibles, palpi and antennæ, except base above, pale testaceous, the latter fuscous above; mesothorax ferruginous, blackish centrally and behind; tegulæ yellowish, a ferruginous spot beneath; wings hyaline, beautifully irideseent, nervures and stigma pale honey-yellow, areolet 5-angular, not petiolated; legs pale ferruginous, posterior coxæ with a fuscous spot; abdomen ferruginous, the first segment except apex black; the ovipositor as long as body. Length 2½ lines.

Hab.—West Virginia.

18. **Lampronota agilis**, n. sp.—♀.—Slender, black; apical margin of clypeus dull yellowish; mandibles and palpi brown; antennæ brown-black, flagellum sometimes pale at base; thorax entirely black, sides of metathorax finely pubescent; wings hyaline, faintly dusky, iridescent, nervures and stigma black, areolet very minute, petiolated; legs black, the two anterior pairs varied with testaceous, four posterior coxæ and base of posterior femora more or less, bright ferruginous; abdomen subclavate, shining, ferruginous, the fourth and following segments and occasionally the apical margin of the third segment, black; ovipositor short, about one-third the length of abdomen. Length 3½—4 lines.

Hab.—New York; Pennsylvania.

19. **Lampronota exilis**, n. sp.—♀.—Long, slender, black; apical margin of clypeus, mandibles, palpi and tegulæ, dull testaceous: upper anterior orbits pale yellowish; flanks and apex of metathorax and lower margin of pleura more or less rufous: wings subhyaline, tinged with yellowish fuscous, areolet small, petiolated; legs ferruginous, posterior tibiæ and tarsi sometimes more or less fuscous, trochanters black, apex of the two anterior pairs yellowish: abdomen entirely ferruginous, sometimes the apex is more or less fuscous, ovipositor as long as body. Length 4½ lines.

♂.—Face more or less, clypeus, mandibles, palpi and scape beneath, yellowish ferruginous; upper margin of prothorax with a reddish spot; legs entirely ferruginous; base of first abdominal segment sometimes black. Length 4½ lines.

Hab.—Canada; Mass., Conn.

20. **Lampronota rubrica**, n. sp.—♀.—Head and antennæ black; most of clypeus, mandibles, palpi, and upper anterior orbits, pale yellow; pro- and mesothorax and pleura black; two dots in front of mesothorax, sometimes wanting, tegulæ and scutellum, lemon-yellow; metathorax and spot on each side of pleura, ferruginous; basal margin of metathorax more or less black; wings hyaline or subhyaline, areolet more or less petiolated; legs ferruginous, trochanters more or less black, posterior tibiæ and tarsi tinged with fuscous; abdomen entirely ferruginous: ovipositor as long as body. Length 4½ lines.

Var. ♀.—Metathorax black, ferruginous only at sides and apex; scutellum with two yellow spots; mesothorax immaculate. Length 4½ lines.

Hab.—Mass., Conn, West Va.

22. **Lampronota coloradensis**, n. sp.—♀.—Large, yellowish-ferruginous; anterior orbits dilated beneath eyes, clypeus, mandibles, anterior lateral margin of mesothorax, and tegulæ, lemon-yellow; antennæ black, scape ferruginous; wings hyaline, faintly yellowish, areolet small, petiolated: metathorax dull ferruginous, rugulose, with a deep central groove; pleura and flank of metathorax smooth and polished; anterior legs in front tinged with yellowish: abdomen smooth and polished; venter pale yellow, spotted with fuscous; ovipositor as long as abdomen. Length 5½—6 lines.

Hab.—Colorado.

MENISCUS, Schiödte.

1. **Meniscus elegans**, n. sp.—♀.—Black: orbits, dilated beneath eyes, spot on middle of face, sometimes divided into two and sometimes confluent with orbital line, clypeus, mandibles, palpi, apex of scape beneath, upper and lower margins of prothorax, two spots on front of mesothorax, a spot on the disk, tegulæ, a spot beneath, a spot on each side of pleura anteriorly, another in front of each middle coxa, scutellum except base, line on postscutellum, subtriangular spot at apex of metathorax, a dot on each flank, four anterior legs, apex of their coxæ, apex of posterior trochanters, knees, and base of their coxæ, lemon-yellow: abdomen rufo-ferruginous, first and second dorsal segments black, base and apex of first segment and apex of second, yellow; wings hyaline, apex fuliginous, areolet subrhomboidal, with a long petiole; head and thorax with a short fine pubescence; thorax with large punctures, more coarse and somewhat rugose on metathorax; ovipositor as long as abdomen. Length 4—5½ lines.

The ♂ has the face entirely, scape beneath and scutellum entirely, lemon-yellow; the two spots on front of mesothorax are much larger than in ♀, while the marks on pleura become confluent, forming an irregular, rather oblique line; antennæ slender, rufo-testaceous beneath; apex of abdomen dusky. Length 4½ lines.

Hab.—N. Y., Md., W. Va., Missouri.

2. **Meniscus mirabilis**, n. sp.—♀.—Black, shining; clypeus, mandibles, palpi, space beneath eyes, short narrow orbital line on each side of antennæ, spot at summit of each eye, tegulæ, line before, and a cuneiform spot on each side of mesothorax, yellowish-ferruginous; wings hyaline, iridescent, areolet wanting; legs honey-yellow, coxæ and trochanters lemon-yellow, four posterior coxæ within and a line on outside, and all the trochanters behind except tips, black; extreme base of posterior femora, a narrow band before apex, apex of their tibiæ and their tarsi more or less, black or fuscous; abdomen black, smooth and shining, apical margin of second and following segments narrowly whitish; venter yellowish; ovipositor as long as body. Length 4 lines.

Hab.—Massachusetts. This looks very much like a *Lampronota*, but the tarsal claws are pectinated and the areolet wanting.

PHYTODIETUS, Grav.

1. **Phytodietus vulgaris**, n. sp.—♀.—Black, head and thorax subopaque, abdomen smooth and polished; mandibles except tips, palpi, spot at summit of each eye, second joint of antennæ, tegulæ, line in front on each side of mesothorax, apex of scutellum, two dots at base, spot on postscutellum and a transverse line before apex of metathorax, sometimes interrupted or reduced to a lateral dot, white; pleura beneath and flanks of metathorax sometimes more or less rufous or ferruginous; wings hyaline, areolet obliquely triangular, petiolated; antennæ brown towards apex; legs pale bright ferruginous, most of anterior coxæ, their trochanters, apex of middle trochanters, apical half of posterior pair, all the knees, and four anterior tibiæ and tarsi white, base of their femora, broad band before apex, their tibiæ, except a more or less distinct pale line about middle, sometimes forming a broad white band, and their tarsi, sometimes more or less pale at base, black; abdomen subsessile, apical margin of all the segments narrowly whitish, interrupted laterally; ovipositor nearly as long as abdomen. Length 3—5 lines.

Var. ♀.—Angular mark on middle of face, spot beneath eyes, upper anterior orbits, mark on disk of mesothorax and transverse subapical line on metathorax dilated medially, white; clypeus piceous; antennæ brown; pleura whitish beneath; flanks of metathorax ferruginous; posterior tibiæ white, the apex and narrow annulus before base, black; base of posterior tarsi white. Length 4½ lines. (Canada).

♂.—Face entirely, clypeus, mouth, scape beneath, lateral and apical margins of scutellum, and four anterior legs, all white; antennæ as long as body, otherwise marked as in ♀. Length 4½ lines.

Hab.—Canada; Mass., Conn., Penn., Del., Ills. A common and variable species.

2. **Phytodietus distinctus**, n. sp.—Differs from *vulgaris* as follows:—Clypeus whitish, mandibles white only before apex; anterior orbits white; metathorax has a central white spot and one on each side, forming a semicircle; posterior

legs ferruginous, with only the apex of tibiæ and their tarsi dusky; abdomen subpetiolated; venter white, banded with black. Length 5 lines.

Var. ♀.—Face, mesothorax, pleura and metathorax black, immaculate. Length 4½ lines.

Hab.—Mass., Del. Quite distinct from *vulgaris* by the subpetiolated abdomen and differently colored posterior legs.

XORIDES, Grav.

Xorides borealis, n. sp.—♀.—Black; narrow anterior orbits, palpi, tegulæ and lower margin of prothorax white; wings hyaline; anterior legs whitish, yellowish behind, four posterior coxæ and trochanters, and intermediate femora, pale ferruginous; intermediate tibiæ and tarsi dusky, posterior femora, tibiæ and tarsi black; base of their tibiæ narrowly white; incisures of abdominal segments more or less whitish; venter banded with white; ovipositor as long as abdomen. Length 5 lines.

Hab.—Hudson's Bay Territory.

EUXORIDES, n. gen.

Closely resembles *Xorides*, from which it is at once distinguished by the anterior wing having a triangular, subpetiolated areolet; the head is more transverse, being less broad behind the eyes; the face wider beneath; and the posterior legs proportionally shorter and more robust.

Euxorides americanus, n. sp.—♀.—Black, opaque; palpi, scape beneath, lower margin of prothorax, tegulæ and spot before, white; clypeus and mandibles rufo-piceous; metathorax finely rugulose, channelled centrally and with short glittering pile laterally; wings hyaline, iridescent; anterior coxæ and legs white, their femora yellowish behind; four posterior legs, including coxæ, honey-yellow, tips of intermediate coxæ, trochanters, knees, tibiæ, apical half of posterior trochanters and their knees, whitish; intermediate tarsi, base of posterior trochanters, their femora at base and before apex, their tibiæ except base and their tarsi, black; abdomen convex, somewhat shining, incisures of the segments whitish; venter more or less whitish; ovipositor shorter than abdomen. Length 4½ lines.

Hab.—Conn., Penn., Texas.

XYLONOMUS, Grav.

Abdomen entirely black.

Prothorax above with a prominent lateral tubercle.

Wings with a fuscous band.....1. **australis**, n. sp.

Wings entirely hyaline.....2. **humeralis**, Say.

Prothorax simple.

Legs entirely black.....3. **cincticornis**, Cress.

Legs black, base of tibiæ and of tarsi white.....4. **stigmapterus**, Say

Four anterior legs and posterior coxæ ferruginous.....5. **frigidus**, n. sp.

Abdomen with lateral white spots.....6. **albopictus**, n. sp.

1. **Xylonomus australis**, n. sp.—♀.—Large, black, opaque; head piceous or rufo-piceous, face densely rugulose, vertex and cheeks smooth, shining, with scattered punctures; mouth black; antennæ long, slender, black, with a broad white annulus beyond the middle; thorax rough and uneven, tinged with

brown beneath where the surface is smooth, rather sparsely punctured and shining; prothorax above with a robust acute tubercle on each side; mesothorax excavated medially, coarsely punctured and somewhat transversely striated; metathorax densely rugose, the flanks coarsely punctured, the apex with a short lateral spine; wings subhyaline, apex dusky, a broad ill-defined fuliginous band on anterior pair beneath stigma, which is black with a white spot at base; legs black, polished, the trochanters more or less, the knees, the anterior legs in front and all the tarsi rufo-testaceous; abdomen densely rather finely rugose, smoother at apex; ovipositor as long as body. Length 9½ lines.

Hab.—Louisiana, Texas. Sometimes the four anterior legs are entirely reddish-brown.

5. **Xylonomus frigidus**, n. sp.—♀.—Small, robust, black, shining; mouth piceous; wings hyaline; metathorax opaque, with prominent elevated lines; legs, including coxæ, pale ferruginous, anterior pair pale in front; posterior femora, their tibiæ except base, and their tarsi black; abdomen shorter and broader than usual, subsessile, densely minutely sculptured, base rugulose, apex shining; ovipositor as long as body. Length 5 lines.

Hab.—Hudson's Bay Territory. This has much the form of an *Odontomerus*.

6. **Xylonomus albopictus**, n. sp.—♀.—Black, shining, face except a median brown line, anterior orbits, clypeus, broad posterior orbits, scape beneath, upper and lower margin of prothorax, short line beneath tegulæ, apex of scutellum, spot or postscutellum, band on apex of metathorax, and a spot on each apical corner of all the abdominal segments, white; base of mandibles, palpi and margin around clypeus, dull rufous; clypeus concave; thorax depressed above; metathorax short and broad, with well defined elevated lines, base smooth and polished, central rhomboidal space transversely aciculate, apex with a small lateral tubercle; wings hyaline, iridescent; legs short and rather robust, two anterior pairs honey-yellow; the trochanters and four anterior knees whitish; four anterior tibiæ with a dusky spot before base, apex of their tarsi also dusky; posterior legs, except trochanters and base of their tibiæ, black; abdomen much depressed, almost flat, subpetiolate, subclavate, second and third segments with an arcuated lateral groove, making the middle more or less prominent; apex incurved, shining. Length 5½ lines.

Hab.—New York.

ODONTOMERUS, Grav.

Body and legs entirely black.....1. **æthiops**, Cress.
Body black, legs yellowish ferruginous.....2. **mellipes**, Say.
Body and posterior legs black.....3. **vicinus**, n. sp.
Head and thorax black; abdomen and legs ferruginous.
  Large: coxæ and trochanters ferruginous.....4. **bicolor**, n. sp.
  Small; coxæ and trochanters black.....5. **abdominalis**, Cress.

3. **Odontomerus vicinus**, n. sp.—♂.—Differs from *mellipes* ♂ only by the posterior legs, including their coxæ, being black, except base of their femora, and apex of their trochanters, which are honey-yellow, or concolorous with the four anterior leg. Length 5 lines.

Hab.—Massachusetts. The tubercles at apex of metathorax are not so prominent as in *mellipes*, and the abdomen less shining.

4. **Odontomerus bicolor**, n. sp.—♀.—Black, polished, head and thorax with scattered punctures; metathorax with sparse pubescence, and with two approximate median carinæ, sides coarsely punctured; wings tinged with fuliginous; legs including coxæ and abdomen except extreme base of first segment, ferruginous; ovipositor much longer than the body. Length 7½ lines.

Hab.—Pennsylvania.

LIST.

COLEOCENTRUS, Grav.

Pettitii, *Cress.*, Canadian Entomologist, i, p. 35, ♀.

AROTES, Grav.

formosus, *Cress.*, Can. Ent. i, p. 34; Trans. Am. Ent. Soc. ii, p. 260, ♂ ♀.
vicinus, *Cress.*, Trans. Am. Ent. Soc. ii, p. 260, ♂.
venustus, *Cress.*, Trans. Am. Ent. Soc. ii, p. 260, ♂ ♀.
amœnus, *Cress.*, Can. Ent. i, p. 34; Trans. Am. Ent. Soc. ii, p. 260, ♂ ♀.
decorus, *Say.*, Bost. Jour. Nat. Hist. i, 248. Cress., Trans. Am. Ent. Soc. ii, p. 260, ♂ ♀.

ACŒNITES, Grav.

rupinsulensis, *Walsk.* Cress., Trans. Am. Ent. Soc. iii, p. 143, ♀.

RHYSSA, Grav.

persuasoria, *Linn.*, &c. Cress., Proc. Ent. Soc. Phil. iv, p. 270, ♂ ♀
albomaculata. *Cress.*, Proc. Ent. Soc. Phil. iii, p. 318, ♀.
canadensis, *Cress.*, Can. Ent. i, p. 35, ♀.

THALESSA, Holmgr.

Nortoni, *Cress.*, Proc. Ent. Soc. Phil. iii, p. 317, ♀.
lunator, *Fabr.*, Ent. Syst. ii, p. 162, (♂ ♀).
atrata. *Fabr.*, Ent. Syst. ii, p. 179. Brulle, Hym. tab. 40. fig. 1, ♀.
laevigata, Brullé, Hym. p. 78; tab. 40 fig. 2, ♂.
nitida, *Cress.*, Proc. Ent. Soc. Phil. iii, p. 319, ♂.

EPHIALTES, Grav.

rex, *Kriechb.*, Stett. Ent. Zeit. xv, p. 155, (♀).
occidentalis, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 269, ♀.
tuberculatus, *Fourcr.* Grav. Ich. Eur. iii, p. 228, (♀).
perlongus, *Cress.*, Trans. Am. Ent. Soc. iii. p. 143, ♂.
macer. *Cress.*, Can. Ent. i, p. 35, ♂ ♀.
albipes. *Cress.*, Trans. Am. Ent. Soc. iii. p. 143, ♀.
irritator. *Fabr.*, Ent. Syst. ii, p. 164. (♂ ♀.)

EPIMECIS, Brullé.

Wiltii, *Cress.*, Trans. Am. Ent. Soc. iii, p. 143, ♀.

PERITHOUS, Holmgr.

pleuralis, *Cress.*, Can. Ent. i, p. 36, ♀.

THERONIA,. Holmgr.

melanocephala, *Brullé*, Hym. p. 99, (♂ ♀).
fulvescens, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 268, (♂ ♀).

PIMPLA, Fabr.

maura, *Cress.*, Trans. Am. Ent. Soc. iii, p. 145, ♀.
atrocoxalis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 145, ♀.
pedalis, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 268, (♂ ♀).
texana, *Cress.*, Trans. Am. Ent. Soc. iii, p. 145, ♀.
tenuicornis, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 267. (♂ ♀).
annulipes, *Brullé*, Hymen. p. 102, (♂ ♀).
aquilonia, *Cress.*, Trans. Am. Ent. Soc. iii, p. 145, ♂.
Ontario, *Cress.*, Trans. Am. Ent. Soc. iii, p. 146, ♂.
picticornis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 146, ♂.
novita, *Cress.*, Trans. Am. Ent. Soc. iii, p. 146, ♀.
indagatrix, *Walsh*, Cress., Trans. Am. Ent. Soc. iii, 146, ♂.
annulicornis, *Walsh*. Cress., Trans. Am. Ent. Soc. iii, p. 147, ♂ ♀.
pleurivinctus, Say, Bost. Jour. Nat. Hist. i, p. 232.
conquisitor, *Say*., Bost. Jour. Nat. Hist. i, p. 232, (♂ ♀).
incompleta, *Cress.*, Trans. Am. Ent. Soc. iii, p. 147, ♀.
inquisitor, *Say*, Contrib. Macl. Lyc. i, p. 71, (♂ ♀).
alboricta, *Cress.*, Trans. Am. Em. Soc. iii, p. 147, ♂.
rufopectus, *Cress.*, Trans. Am. Ent. Soc. iii, p. 148, ♀.
scriptifrons, *Walsh*. Cress., Trans. Am. Ent. Soc. iii, p. 148, ♀.
pterelas, *Say*, Contrib. Macl. Lyc. i, 71, (♂ ♀).
notanda, *Cress.*, Trans. Am. Ent. Soc. iii, p. 148, ♂ ♀.
rufovariata, *Cress.*, Trans. Am. Ent. Soc. iii, p. 149, ♀.

POLYSPHINCTA, Grav.

texana, *Cress.*, Trans. Am. Ent. Soc. iii, p. 149, ♀.
Burgessii, *Cress.*, Trans. Am. Ent. Soc. iii, p. 149, ♂.
limata, *Cress.*, Trans. Am. Ent. Soc. iii, p 150, ♀.

CLISTOPYGA, Grav.

annulipes, *Cress.*, Trans. Am. Ent. Soc. iii, p. 150, ♀.

GLYPTA, Grav.

tuberculifrons, *Walsh*. Cress., Trans. Am. Ent. Soc. iii, p. 152, ♂ ♀.
varipes, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 267, ♀.
erratica, *Cress.*, Trans. Am. Ent. Soc. iii, p. 152, ♂ ♀.
inversa, *Cress.*, Trans. Am. Ent. Soc. iii, p. 153, ♀.
pulchripes, *Cress.*, Trans. Am. Ent. Soc. iii, p. 153, ♀.
rufiscutellaris, *Walsh*. Cress., Trans. Am. Ent. Soc. iii, p. 153, ♀.
animosa, *Cress.*, Trans. Am. Ent. Soc. iii, p. 154, ♀.
vulgaris, *Cress.*, Trans. Am. Ent. Soc. iii, p. 154, ♂ ♀.
longiventris, *Walsh*. Cress., Trans. Am. Ent. Soc. iii, p. 154, ♂.
militaris, *Cress.*, Trans. Am. Ent. Soc. iii, p 154, ♀.
monita, *Cress.*, Trans. Am. Ent. Soc. iii, p. 155, ♀.
? parva, *Cress.*, Trans. Am. Ent. Soc. iii, p. 155, ♀.
scitula, *Cress.*, Trans. Am. Ent. Soc. iii, p. 155, ♀.
simplicipes, *Walsh*. Cress., Trans. Am. Ent Soc. iii, p. 156, ♂ ♀.
rubripes, *Cress.*, Trans. Am. Ent. Soc. iii, p. 156, ♂ ♀.
canadensis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 157, ♀.
virginiensis, *Cress.*, Trans. Am. Ent. Soc, iii, p. 157, ♀.
albomarginata, *Cress.*, Trans. Am. Ent. Soc. iii, p. 157, ♀.
macra, *Cress.*, Trans. Am. Ent. Soc. iii, p. 158, ♀.

borealis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 158, ♂.
rufofasciata, *Cress.*, Trans. Am. Ent. Soc. iii, p. 158, ♂.
coloradensis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 158, ♂.
Dakota, *Cress.*, Trans. Am. Ent. Soc. iii, p. 158, ♂ ♀.

SCHIZOPYGA, Grav.

frigida, *Cress.*, Trans. Am. Ent. Soc. iii, p. 159, ♀.

ARENETRA, Holmgr.

canadensis, *Cress.*, Can. Ent. i, p. 26, ♂.
nigrita, *Walsh.* Cress., Trans. Am. Ent. Soc. iii, p. 159, ♂ ♀.
rufipes, *Cress.*, Trans. Am. Ent. Soc. iii, p. 159, ♀.
ventralis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 150, ♂.

CYLLOCERIA, Schiödte.

occidentalis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 160, ♂ ♀.

LAMPRONOTA, Curtis.

occidentalis, *Cress*, Trans. Am. Ent. Soc. iii, p. 161, ♀.
scutellaris, *Cress.*, Trans. Am. Ent. Soc. iii, p. 161, ♀.
pleuralis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 161, ♂ ♀.
pulchella, *Cress.*, Trans. Am. Ent. Soc. iii, p. 162, ♂.
lævigata, *Cress.*, Trans. Am. Ent. Soc. iii, p. 162, ♀.
jocosa, *Cress.*, Trans. Am. Ent. Soc. iii, p. 162, ♂.
insita, *Cress.*, Trans. Am. Ent. Soc. iii, p. 162, ♀.
parva, *Cress.*, Trans. Am. Ent. Soc. iii, p. 163, ♀.
punctulata, *Cress.*, Trans. Am. Ent. Soc. iii, p. 163, ♀.
tegularis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 163, ♂.
rufipes, *Cress.*, Can. Ent. i, p. 36, ♀.
macra, *Cress.*, Trans. Am. Ent. Soc. iii, p. 163, ♂.
varia, *Cress.*, Trans. Am. Ent. Soc. iii, p. 164, ♂.
frigida, *Cress.*, Can. Ent. i, p. 36, (♂ ♀).
americana, *Cress.*, Trans. Am. Ent. Soc. iii, p. 164, ♀.
montana, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 267, ♀.
exigua, *Cress.*, Trans. Am. Ent. Soc. iii, p. 164, ♀.
agilis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 164, ♀.
exilis, *Cress*, Trans. Am. Ent. Soc. iii, 165, ♂ ♀.
rubrica, *Cress.*, Trans. Am. Ent. Soc. iii, p. 165, ♀.
brunnea, *Cress.*, Can. Ent. i, p. 37, ♀.
coloradensis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 165, ♀

MENISCUS, Schiödte.

elegans, *Cress.*, Trans. Am. Ent. Soc. iii, p. 165, ♂ ♀.
Bethunei, *Cress.*, Can. Ent. i, p. 105, ♀.
mirabilis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 166, ♀.

PHYTODIETUS, Grav.

vulgaris, *Cress.*, Trans. Am. Ent. Soc. iii, p. 166, ♂ ♀
distinctus, *Cress.*, Trans. Am. Ent Soc. iii, p. 166, ♀.
pleuralis, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 266, ♂.

XORIDES, Grav.

vittifrons, *Cress.*, Can. Ent. i, p. 37, (♂ ♀).
borealis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 167, ♀.

EUXORIDES, Cresson.

americanus, *Cress.*, Trans. Am. Ent. Soc. iii, p. 167, ♀.

XYLONOMUS, Grav.

australis, *Cress.*, Trans. Am. Ent. Soc. iii, p. 167, ♀.
humeralis, *Say*, Contrib. Macl. Lyc. i, p. 74, ♀.
cincticornis, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 288, ♀.
stigmapterus, *Say*, Long's 2d Exped. ii, p. 325, (♂ ♀).
frigidus, *Cress.*, Trans. Am. Ent. Soc. iii, p. 168, ♀.
albopictus, *Cress.*, Trans. Am. Ent. Soc. iii, p. 168, ♂.

ECHTHRUS, Grav.

niger, *Cress.*, Can. Ent. i, p. 37, ♂ ♀.
abdominalis, *Cress.*, Can. Ent. i, p. 37, ♂ ♀.

ODONTOMERUS, Grav.

æthiops, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 289, ♂ ♀.
mellipes, *Say*, Contrib. Macl. Lyc. i, p. 74; Bost. Jour. ii, p. 242, ♂ ♀.
vicinus, *Cress.*, Trans. Am. Ent. Soc. iii, p. 168, ♂.
bicolor, *Cress.*, Trans. Am. Ent. Soc. iii, p. 169, ♀.
abdominalis, *Cress.*, Proc. Ent. Soc. Phil. iv, p. 289, ♀.

DESIDERATA.

Acænitus melleus, Say, Bost. Jour. ii, p. 249, ♀.

Pimpla humida, Say, Bost. Jour. ii, p. 224, ♀.—This evidently belongs to the genus *Rhyssa*.

Pimpla rufipes, Brullé, Hymen. p. 102, ♂ ♀.—This is probably South American while his *annulipes* is a common North American species.

Anomalon divaricatus, Say, Bost. Jour. ii, p, 244.—This is a species of *Glypta* and possibly identical with *G. pulchripes* described above.

Remarks on Dr. Boisduval's "LEPIDOPTERES DE LA CALIFORNIE."

BY AUG. R. GROTE AND COLEMAN T. ROBINSON.

In the twelfth Volume of the Annales de la Société Entomologique de Belgique, Dr. Boisduval reproduces his first paper on Californian Lepidoptera, with additional species and corrections. The Volume bears the date of 1868—1869; so that no earlier date can be ascribed to Dr. Boisduval's paper, with which it commences, than *July* 1868.

It is necessary to note this, since certain of the species had been described and illustrated by ourselves in these pages under the date of *January* of the same year.

Dr. Boisduval enumerates eighty-four species of Diurnals as found in California. This number is given without reference to the numerous species described by Mr. Edwards. In fact Dr. Boisduval's material is still evidently that collected by M. Lorquin, and on which his first paper was based, and shows no acquaintance with subsequent discoveries. The error of regarding certain analogous or representative species from our Western District as identical specifically with European or Eastern insects, is continued and repeated. California is credited with a "*Thanaos cervatnes*," stated however to be "un peu plus grand que les individus de l'Espagne, and a "*Thanaos Juvenalis*," conversely "un peu plus petite que les individus de la Georgie."

In the Ægeriidæ three new species are described under the genus *Sesia*. The use of the generic name instead of Ægeria *Fabr.*, does not seem to be warranted by Fabricius' writings, and it should rather be retained for that genus of Sphingidæ of which S. fuciformis is typical, and from which Fabricius afterwards separated the species of Ægeria.

In the Sphingidæ, *Macroglossa thetis*, Boisd. Ann. Soc. Ent. Fr. 3 Zieme Ser. Bull. p. xxxii, has been figured and described by ourselves in these pages as Sesia thetis. The species appears to represent our Eastern Sesia diffinis in the Western District. Under the name of *Macroglossa Erato*, Dr. Boisduval evidently describes Euproserpinus phaeton. This small species, which offers many characters in common with the European Macroglossum stellatarum, nevertheless seems to us generically distinct. Its synonymy may be recorded as follows:

Macroglossum phaeton.

Euproserpinus phaeton, G. & R. Proc. Ent. Soc. Phil. (Nov. 1865).

Macroglossa Erato, Boisd. Ann. Soc. Ent. Belgique Vol. XII, p. 65, (1868—1869).

Euproserpinus phaeton, G. & R. Proc. Am. Ent. Soc. (Sept. 1868).

Under Cramer's later specific name, Br. Boisduval records Deilephila lineata *Fabr.* spec. as a habitant of California. In our "Sphingidæ" (1865), will be found the full synonymy of the species, with the explanation that Fabricus' *first* description (1775 and therefore earlier than Cramer's Vol. 2—1779) applies to our American species and not to the European Deilephila livornica. Further on Boisduval records the European Deilephila galii as found in California, and considers our Deilephila chamoenerii *Harris*, as the same species. Sphinx sequoiae *Boisd.* and Sphinx strobi *Boisd.* (the latter possibly not correctly attributed to California) are then described. These appear to belong to Hübner's genus Hyloicus. In the Castniinae six species are described under the genus *Agarista*. For all of these species known to us the generic term Alypia should be used. The first—Alypia octomaculata—our common species from the Atlantic District, is unknown to us from California, and from analogy we are led to regard Dr. Boisduval's habitat as an error. All the species of this genus from the Western District of our Continent have the spots on both pairs of wings above yellow or yellowish, while A. octomaculata, A. langtonii, etc., have the spots on the secondaries white. This is a very interesting fact, pertinent to a study of the relationships between coloration and geographical distribution in insects. Dr. Boisduval describes Alypia dipsaci *G. & R.*, Alypia lorquinii *G. & R.*, and Alypia mariposa, *G. and R.*, previously illustrated by us under the same specific names. Under the genus Ctenucha Dr. Boisduval describes two species, C. robinsonii and C. harrisii, apparently belonging to the second section of the genus. "*C. rubroscapus*" is C. multifaria* Walk. spec.; while *C. corvina* Boisd. p. 71, is a synonym of C. ochroscapsus, *G. & R.*, described by us from specimens in the Berlin Museum. Dr. Boisduval credits Ecpantheria scribonia to California and describes four species under the genus *Chelonia*, of which *C. achaia*, is Arctia achaia, previously illustrated in these pages. Arctia sciurus *Boisd.* ib. p. 79, is not improbably Leucarctia californica *Packard*. Of L. acraea, Dr. Boisduval remarks that it is found as far south as Central America. The specimens we have seen from Mexico and Central America, seem to indicate the existence of a dis-

* G. & R. List. Lep. N. Am. p. VII (1868).

tinct species in those countries. The most prominent difference was found in the length of the antennal pectinations in the same sex. The Nemeophila rufula *Boisd.*, founded on a single individual in indifferent conservation, is now referred (ib. p 79) to the genus Arctia. We suspect that this specimen will prove to belong to Antarctia punctata *Pack.* Under its synonym, *Phoegoptera*, Dr. Boisduval describes three Californian species of Halisidota. Of these *P. quercus*, p. 81, is Halisidota Edwardsii *Pack.*, *P. salicis*, id. is Halisidota californica, *Walker*, and P. cinnamomea, p. 80, is not improbably, H. roseata *Walk.*, or at least an allied species. Under the genus *Bombyx*. Dr. Boisduval enumerates the American species of Clisiocampa. *Bombyx fruticetorum*, p. 82, is a fresh synonym of C. americana *Harris*. We had not previously heard that it occured in California. *Bombyx drupaceorum* is again a fresh synonym of C. disstria; and again the habitat of California, where the species is said suspiciously to be "beaucoup plus rare," is new and doubtful. Finally *Bombyx pseudoneustria*, p. 82, is C. californica *Pack.* As *Lasiocampa* carpinifolia p. 83, Dr. Boisduval describes a species of Gastropacha from California; but we doubt that to this new species the *Phalaena ilicifolia* of Smith should be cited. Dr. Packard has shown that Smith may have intended under his erroneous determination either G. americana *Harris*, or G. ferruginea, *Pack.*, from our Atlantic District. The figures of Abbot & Smith, whatever may be said of their fidelity, are not to be relied on to distinguish such closely allied species. "*Saturnia ceanothi*, Behr," is Platysamia californica, and it appears also to be the species "mentionné" by the name of "*Eurydus*" by Dr. Boisduval in 1855. We have as yet seen no description of this species prior to 1865. Pseudohazis eglanterina is cited under Hübner's genus Telea, of which our T. polyphemus is typical. Two species of Hepialus, H. hectoides, p. 85, and H. californicus ib., afford the first evidence of the existence of this genus in California we have yet met with. As *Dicranura* scolopendrina, Dr. Boisduval describes what is apparently an interesting Western representative of the genus Cerura. A new species of Ichthyura is described as *Clostera* incurvata p. 86; but from the text it is not certain that it is from California. Gluphisia trilineata *Pack.*, is considered as the same as the European G. crenata on p. 87, and additionally registered from California. As *Hastor gibbosa* our Nadata gibbosa is registered from California. Dr. Packard has shown the existence of two closely allied species of the genus from our Atlantic District. Should a species occur in California it

could hardly be identical with either of them. This paper of Dr. Boisduval's ends with a list of the Noctuidae of California collated from M. Guenée's works and descriptions of two new species of Brephos, viz: B. californicus, *Boisd.*, and B. melanis, *Boisd.* p. 88.

From a perusal of this paper of Dr. Boisduval's it will be seen, that the acquaintance of that distinguished Entomologist with his subject has not greatly increased since 1852, the date of his first paper; while a knowledge of American entomological publications since that date would have obviated alike the redescription of several species and the appearance of refuting for the first time many errors of the older writers already well understood and corrected in this country.

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DESCRIPTION OF AMERICAN LEPIDOPTERA, No. 5.

BY A. R. GROTE & C. T. ROBINSON.

BOMBYCIDAE.

LITHOSIINAE.

LITHOSIA, *Fabr.*

Lithosia cephalica n. s.

♂ ♀.—White. Primaries and secondaries above white or whitish, immaculate. Primaries beneath dusky. Head entirely fulvous yellow. Body parts above whitish, beneath with the legs dusky. *Exp.* 24 to 26 mm.

Habitat.—Texas (Belfrage). Form of L. casta *Sanborn*, but a smaller insect, differing by the discolorous head.

ARCTIINAE.

We have received from Texas specimens of a moth with dun-colored semitransparent wings, reminding us of Euphanessa, but with plumose antennae and other characters more nearly allying it to the Arctian genus Euchaetes, for which we propose the name:

Vanessodes clarus.

While the eyes are large and globose, the head itself is relatively small. The clypeus is narrow and its sides comparatively straight. The frontal scales converge from the sides of the clypeus, while those from the occipital region depend forwards between the antennae. The labial palpi are divaricate, exceed the front and are coarsely scaled so as to conceal the joints. In this respect the moth does not

differ greatly from Euchaetes. The head is relatively smaller than in Euchaetes and held freer from the thorax. The scaled male antennæ are bipectinate, dependant at the tips and are shorter, the pectinations longer than in Euchaetes. The antennus thus reminds us of the succeeding Dasychirid Group. We have counted thirty three (33) pairs of these pectinations. In the female the pectinations are reduced so that the antennus appears simple; it is provided with setal hairs. The smooth and closely scaled legs are rather long and slender, the tarsal joints hidden by the close squamation. The hind femora are provided with two pair of short spines; one, the shortest, at the apex of the joint; the second, beyond or without the middle. The femoral spurs are shorter than in Euchaetes. The female abdomen is short and plump, reminding us of certain Lithosiid genera. In the male it is slender, but hardly exceeds the anal angle of the secondaries in length.

The wings widen outwardly more than usual; hence the outline is not dissimilar to Ameria and other Lithosian genera. However the neuration differs essentially. In Ameria and Euphanessa we have a small triangular supplementary cell formed above the discal cell, and a different plan of costal nervulation. From these, Vanessodes and Euchaetes both differ. In the present genus the subcostal nervure emits two superior nervules which join the costa before the apex. Beyond these, two inferior nervules are thrown off from the nervure to the external margin below the apex. The extremity of the s. c. nervure is shortly furcate at the apex of the wing. The course of the median nervure and nervules differs from Euchaetes, in which the 1st 2d and 3d m. nervules arise together. Here the 1st, 2d and 3d are thrown off at intervals, the discal cell is open. Here is no median fold as in Ameria and Euphanessa. The open discal cell of the secondaries is proportionally longer and narrower in Vanessodes than in the two last mentioned genera; so that the m. nervules are shorter and the whole wing narrower. The four m. nervules are thrown off as on the primary at unequal distances and again at variance with Euchaetes in this respect. The submedian fold is wanting or very slight in Vanessodes, in which there are two inferior nervures.

Vanessodes clarus has the four wings immaculate and concolorous above and below, while the nervules are a little darker. The tint is a deer or mouse color. The head behind, a few scales at the base of the fore wings and the abdomen above are soft yellowish. Beneath, the abdomen, legs, palpi and front are a little darker than the wings, as is the thoracic disc above. It expands from 22 to 24 millemètres. Al-

though its colors are not foreign to its Group, it resembles Phryganidia californica, *Pack.*, as much as any member of the Family in coloration.

NOCTUIDAE.

NOCTUINAE.

ACRONYCTA, *Ochs.*

Acronycta dissecta, n. sp. (Plate 2, fig. 81, ♂.)

♂ ♀.—Form slight, size small. Whitish-grey. Palpi prominent, porrect, second joint with black scales superiorly, third mixed with black scales. Thorax whitish grey mixed slightly with black scales, these latter aggregated on the collar in front. Primaries darker at base and terminally; the wide median space is pale. Basal line discernible. Transverse anterior distinct, geminate, waved, joined to the lower extremity of the basal by a faint streak. Ordinary spots ill-defined, well sized, of the usual shape. Median shade perceptible. Transverse posterior less prominent than transverse anterior, of the usual shape, scalloped between the veins. A neat terminal series of black dots. Fringes grey, interrupted with blackish. Secondaries, beneath, whitish, with a blackish discal mark and irregular median line; above evenly dusky or smoky with the markings of the under surface reflected and slightly iridescent, the veins darker. *Exp.* 26 to 30 mm.

Hab.—Pa.; Reading, Mass. (J. W. Manning). Two specimens received from Mr. Sanborn are labelled "evolved Ap. 2d., 1865." This is the frailest species of the genus known to us.

Acronycta verrillii, n. sp. (Plate 2, fig. 82, ♂.)

♂ ♀.—Clear grey mixed with black. Moderately stout. Palpi whitish grey, second joint blackish at tip. Thorax grey mixed with black. Primaries pure grey, all the markings black and distinct. Transverse anterior widely geminate. Inferiorly between the basal and transverse anterior line is a black shaded streak. Above the submedian vein across the median space the wing is rather broadly shaded with black to the median shade. Orbicular small spherical, distinct and neatly ringed with black, with a black central dot. Reniform well sized of the normal shape, clouded with blackish. Transverse posterior of the usual shape, rather deeply scalloped between the nervules. A regular subterminal series of black marks preceded by white scales. A neat terminal series of black dots. Fringes interrupted with black opposite the terminal black dots and subterminal marks. Secondaries paler in the ♂ than the ♀; beneath with scattered dark scales and very faint dot and line. *Exp.* 32 to 34 mm.

Hab.—Cambridge, Mass. (Verrill No. "80"). Smaller than the European A. auricoma and a darker species, without the black dash at internal angle. Also smaller than the American A. hamamelis and A. clarescens and the European A. rumicis. It appeared to us to be M. Guenée's A. brumosa, an unidentified species, but that it is not "un peu plus grande que *rumicis*." Although greatly smaller it rather resembles A. rubricoma and the succeeding species.

Acronycta luteicoma, n. sp. (Plate 2, fig. 83, ♀.)

♀.—Form rather stout, size somewhat large. Dark grey. Palpi white at base, second joint with black scales superiorly. Thorax above dark clear grey; collar darker shaded superiorly. Primaries dark clear grey, evenly colored. All the lines black, tolerably distinct. Ornamentation as in A. rubricoma. Reniform and orbicular black encircled, the latter large and flattened, obliquely subspherical. Secondaries entirely dark smoky, fringes whitish. Beneath these are whitish with a faint discal dot and median line. Primaries blackish smoky beneath, whitish along costa and externally. *Exp.* 47 mm.

Hab.—Atlantic District. Three specimens from New York and Pennsylvania. This is a large and darker species than A. rubricoma. The orbicular is larger and less spherical. The secondaries are darker above and the primaries below than in A. rubricoma. The anterior wings are more elongate; the costal and internal margins are more parallel so that the wing does not widen outwardly as in A. rubricoma. The name is a MS. one of M. Guenée.

Acronycta funeralis, *G. & R.*

This species is apparently the American representative of the European A. alni. It differs in the extent of the black, shading of the primaries and their shape and ground tint.

Acronycta afflicta, *Grote.*

This species has occurred in Pennsylvania.

LEUCANIA, *Ochs.*

Leucania rubripennis, n. sp. (Plate 2, fig. 77, ♀.)

♂ ♀.—Obscure straw color. Disc of the thorax and upper edge of the prothoracic pieces darkest; collar in front very pale. Anterior wings rather long, narrow, produced at apices. Primaries broadly shaded longitudinally with purple rosy. First from the base outwardly and continuously below the median nervure to external margin. Again from the discal cross vein outwardly, widening and running obliquely upwardly to external margin. Finally along the outer half of costal region. No discal dot. Secondaries thinly scaled, semi-trans-

parent, stained along the edges with obscure straw color and sometimes with purplish. Beneath without marking; the primaries outwardly and superiorly stained with purplish. *Exp.* 32 to 34 mm.

Habitat.—Texas (Belfrage). With the appearance of the typical species of the genus, L. rubripennis differs from all known to us by the broad purple rosy shades of the primaries.

HELIOTHIS, *Ochs.*

Heliothis citrinellus, n. sp. (Plate 2, fig. 79, ♂.)

♂ ♀.—Pale lemon yellow. Head, thorax and primaries concolorous, pale lemon yellow, immaculate. Hind wings silky white. A blackish discal lunule and terminal band broken and discontinued inferiorly. Abdomen whitish, stained with dusky. Male with discolored genital tuft. Beneath, both wings whitish. Primaries with distinct black orbicular and reniform spots and subterminal band. Secondaries with discal spot and faint indications of terminal band. Female genitals concealed. *Exp.* 25—27 mm.

Habitat.—Texas (Belfrage). Very different in coloration from any species known to us. The following species of Heliothis, from North America, are in our collection:

Heliothis exprimens,

Heliothis exprimens, Walk. C. B. M. Noct. p. 687.

Not uncommon from Canada to Pennsylvania. Resembles the European Heliothis umbra (*Hydroecia umbra, Hel. marginata* Auct.), and is not improbably identical with it.

Heliothis umbrosus.

Heliothis umbrosus, Grote, Proc. Ent. Soc. Phil. Vol. 1, p. 219 (1863).

Habitat.—Massachusetts to Texas. A common species, destructive to the Cotton Plant in its larval state. This is the Boll Worm of Agricultural writers. Not improbably the same as the European H. armigera.

Heliothis phlogophagus.

Heliothis phloxiphaga, (err.) G. & R. Trans. Am. Ent. Soc. Aug. 1867.

Habitat.—Western States; Colorado Territory. A common species. Not improbably the same as the European H. dipsacea.

Heliothis citrinellus.

Habitat.—Texas. *Vide supra.*

Heliothis spinosae.

Heliothis spinosae, Guenée, Noct. Vol. 2, p. 182. (1852).

Anthoecia hirtella, G. & R. Proc. Ent. Soc. Phil. Vol. 6, p. 19. Pl. 3, f. 3 ('866).

Habitat.—Canada; Rhode Island. A small species with much the appearance and the ornamentation of an Anthoecia.

Heliocheilus paradoxus, *Grote.*

This has been collected in Texas by Mr. Belfrage.

Anthoecia villosa (*Melicleptria vil.* Grote, Proc. Ent. Soc. Phil. vol. 3, p. 531 Plate 6, f. 6).

This belongs to Lederer's section A of the genus Heliothis — Weibchen mit vorstehendem Legestachel—and bears a certain resemblance in size and ornamentation to the European An. cardui.

ANTHOECIA, *Boisd.*

Anthoecia thoreaui, n. sp. (Plate 2, fig. 80, ♀.)

♂ ♀.—Obscure olivaceous blackish ashen. Size large. Primaries with the middle field palest; this latter margined on either side by the two usual pale arcuated and flexuous lines which are narrower and fainter than ordinarily and limit the dark basal and terminal fields of the wings. A diffuse darker discal spot. Secondaries with broad diffuse faintly darker borders and faint discal spot, somewhat silky and tinged with brownish. Beneath, the secondaries are palest. Both wings show indistinctly discal spots and double transverse sub terminal lines. *Exp.* 36 to 38 mm.

Habitat.—Atlantic District. Resembles A. marginata (*A. riculosa*-Guen.) but is much larger more obscurely colored and wants the prominent white median lines of that species. In A. thoreaui the median lines are less even, more irregular than in A. marginata. We have specimens before us from N. Y., Penn., and Alabama. A. marginata occurs commonly from Mass. to Texas. A. thoreaui is of less frequent occurrence than its ally, but will probably be taken in the same localities.

TARACHE, *Hübner.*

Tarache cretata, n. sp. (Plate 2, fig. 78, ♀.)

♂ ♀.—White. Primaries whitish with faint traces of a transverse anterior shade; a triangular dark clouded spot at the middle of costa. A dark purplish terminal space widening to internal margin, intersected by two narrow rivulous white lines, the outer the most distinct. This dark terminal space is shaded with olivaceous along its inner edge inferiorly, while at the apex there is a reddish lunulate mark more or less distinct. Fringes whitish. Secondaries whitish, iridescent, more or less stained with blackish along external margin. Undersurface immaculate; primaries largely stained with blackish. Head and thorax white, immaculate. Legs white, silky. *Exp.* 20 to 22 mm.

Habitat.—Texas (Belfrage). A smaller species than T. delecta, wanting the yellow secondaries. With that species the terminal space of the primaries shows a resemblance in color and ornamentation to

the genera Eudryas and Ciris. The present species recalls in this respect quite strongly C. wilsonii, although a much smaller insect.

PHALAENIDAE.

FIDONIA, *Treits.*

Fidonia fimetaria. n. sp. (Plate 2, figs. 84, 85, ♂; 86, ♀.)

♂ ♀.—Dark brown and ochreous. Upper surface of wings dark brown; costa of primaries sprinkled with ochreous scales and an ante apical ochreous transverse band broadly incepted on costal region. Fringes pale interrupted with brown. Female paler than the male and showing a terminal macular band at apices of primaries. Beneath the secondaries are dark ochreous transversely banded with whitish nacreous. At base there are irregular spots. Beyond, an interrupted ante median band; a second, post median, is continued and there is a regular series of ovate neatly defined interspacal spots. These bands of nacreous scales are all relatively narrow and strongly limited by dark scales. Primaries dark with a terminal series of spots inaugurated at apices and the inception of the ante apical band marked on costal region. Body brown sprinkled with ochreous beneath. Abdomen above ochreous, with segmentary marks more apparent in the female. *Exp.* 12 to 24 mm.

Habitat.—Texas (Belfrage).

Closely resembles the European F. fasciolaria, *Hufn.* sp. (*Fid. crebraria*, Auct.) and represents the genus typically in our fauna. Our species seems a little smaller, the female darker. On the undersurface of the secondaries the ground tint is brighter and the comparatively narrow well defined pale bands contrast strongly with the wide diffuse and irregular white marking of T. fasciolaria. Our species has the thoracic parts beneath ochreous not whitish. Finally the regular series of terminal ovate interspacal spots on the hind wings beneath in F. fimetaria, are replaced by a vague interrupted terminal band in F. fasciolaria, in which latter species the ante median band is not defined, while the ♂ antennae in F. fimetaria are decidedly more plumose.

Eleven specimens have been sent us from Texas by M. Belfrage, taken in the month of August.

List of the SPHINGIDAE, AEGERIIDAE, ZYGAENIDAE and BOMBYCIDAE of Cuba.

BY AUG. R. GROTE.

Since the publication, in 1867, of the Cuban moths belonging to these Families, a few fresh species have been added to the number and are included in the following List. Comparisons have also been instituted between these insects and those belonging to the same Families from Jamaica, contained in the British Museum and described by Mr. Francis Walker. In this way a few specific synonyms have been detected and some generic changes found necessary.

I still exclude, as belonging to the Noctuidae, a species of Nystalea, *Guenée*, and a Crino, *Hübner*, bearing the Nos. 307 and 231 of Prof. Poey's Collection. This latter may be called Crino dissimilis; I have examined specimens in the Berlin Museum and have four before me. It is of a pale ferruginous color, more reddish than C. beseckei, *Hübner*, which it otherwise closely resembles. The fore wings are without prominent markings except an arcuate pale line arising from the base at internal margin and extending upwardly to the disc. A similar pale line is apparent along internal margin at base. Between these lines lies the darkest portion of the wing. Transverse angulated shades cross the wing terminally. The secondaries are paler than in C. beseckei, while in size the species are similar. Although this may ultimately be found specifically identical with its Brazilian ally, I record it under another name since I perceive points of difference and, with a different habitat we may expect a representative species.

I exclude Sesia thysbe from the present List, as, from recent discoveries in the United States, I am led to believe that if a species of this genus really occurs in Cuba, it will be found to be distinct from the common one of our Middle States. Possibly S. floridensis may occur in Cuba; but more likely an autochthonus species will be discovered.

LIST.

SPHINGIDAE.

MACROGLOSSINI.

Aellopos *Hübner.*

tantalus *Hübner.*
Sphinx tant. Linn.
Sphinx zonata Drury.
titan *Hübner.*
Sphinx tit. Cramer.
Macrogl. balteatum Kirtland.
Macrogl. annulosum Swainson.
blainii *n. sp.* (1)

Eupyrrhoglossum *Grote.*

sagra *Grote.*
Macroglossum sagra Poey.

Enyo *Hübner.*

lugubris *Walk.*
Sphinx lug. Linn.
Sphinx fegeus Cramer.
camertus *Hübner.*
Sphinx cam. Cramer.
danum *Hübner.*
Sphinx dan. Cramer.

Hemeroplanes *Hübner.*

pseudothyreus *Grote.*

Perigonia *Boisd.*

lusca *Walker.*
Sphinx lusc. Fabr.
lefebvrii *Grote.*
Macroglossa lefeb. Lucas.
divisa *Grote.*

Calliomma *Walker.*

lycastus *Walk.*
Sphinx licast. Cram.
? Sphinx galianna Burm.

CHOEROCAMPINI.

Pergesa Walker.

thorates Walker.
Orcus thor. Hübner.

Choerocampa *Duponchel.*

gundlachii *H-S.*
irrorata *Grote.*
porcus *H-S.*
Orcus porcus Hübn.
chiron *Walk.* (2)
Sphinx chiron Drury.
a. nechus *Walk.*
Sphinx nechus Cram.

? Metopsilus Duncan.

robinsonii *Grote.*
Chocroc. falco ‡ H-S.
tersa *Harris.*
Sphinx tersa Linn.

Deilephila *Ochs.*

calverleyi *Grote.*
lineata *Harris.*
Sphinx lin. Fabr. (Syst. Ent. 1775.)
Sphinx daucus Cram.

Philampelus *Harris.*

vitis *Harris.*
Sphinx vitis Linn. Drury, Fabr., W.

1.—Aellopos blainii, n. sp., is smaller than its congeners and shows in its ornamentation a resemblance to the species of Eupyrrhoglossum.—Olivaceous blackish. Eyes margined with white above. Tegulae broadly lined within with white hair. Abdomen with a dorsal double row of black marks, the segments above lined with pale yellowish; the two penultimate segments largely yellowish at the sides; the preceding two are here black, the first of these with a few orange scales. Beneath with distinct lateral rows of segmentary white dots. Fore wings shaded with bright brownish basally, crossed by two transverse perpendicular bands, the inner whitish, the outer vitreous and reproduced beneath; and with an external sinuate vitreous band, broken superiorly into distinct spots and reproduced on the under surface. Hind wings black with a faint indication of a yellow median band; beneath paler, whitish at base and crossed by two dark median lines. Thorax beneath yellowish white. Exp. 40 mm. Gundlach's No. 1055.

2. The specimens received all belonged to the green form of this species, described by Cramer under the specific term *nechus*.

V., Cram. 267 C., Smith, Westw.,—Merian, Plate 47 (upper fig.) fide Linn.
Sphinx fasciatus Sulzer.
Dapo jussieuae Hübner.
Phil. juss euae Walk.
Phil. fasciatus Lucas.
linnei *G. & R.*
Sphinx vitis ‡ Cram. (268 E.)
Dapo vitis ‡ Hubner.
Philamp. vitis ‡ Walk.
Philamp. fasciatus ‡ Grote.
satellitia *Walker.* (3).
Sphinx satellitia Linn.
Sphinx lycaon Cramer.
a. posticatus *Grote.*
Photus lycaon Hübner.
Philamp. lycaon Grote.
labruscae *Walker.*
Sphinx labr. Linn.

Pachylia *Walker.*

ficus *Walk.*
Sphinx ficus Linn.
Chocrocampa Crameri Ménét.
inornata *Clemens.*
Sphinx ficus ‡ Cram. 394 D.
Chocroc. ficus ‡ Ménét.
resumens *Walker.*

Ambulyx *Boisd.*

strigilis (Linn.)
Sphinx strig. Linn.
gannascus (Stoll).
Sphinx gann. Stoll.

SPHINGINI.

Diludia *G. & R.*

brontes *G. & R.*
Sphinx brontes Drury.
(H-S., Grote, non Boisd.)

Pseudosphinx *Burm.*

tetrio *Burm.*
Sphinx tetrio Linn.
Sphinx hastrubal Cram.

Amphonyx *Poey.*

antaeus *Poey.*
Sphinx ant. Drury.
Sph. jatrophae Fabr.
duponchel *Poey.*
cleuentius *Poey.*
Sphinx cluen. Cramer.

Macrosila *Walk.* (emend.)

rustica *Walk.*
Sphinx rustica Fabr.
Sphinx chionanthi Smith.
carolina *Clemens.*
Sphinx car. Linn.
afflicta Walk.
Sphinx afflic. Grote.
cingulata *Clemens.*
Sphinx convolvuli ‡ Drury.
Sphinx cingul. Fabr.
Sphinx convolruli ‡ Smith.
Sphinx druraci Donovan.

Sphinx *Linn.* (emend.)
? Hyloicus Hübner.

poeyi.
Hyloicus poeyi Grote.

Isognathus *Felder.*

rimosus.
Erinnyis rim. Grote.
congratulans.
Erinnyis congrat. Grote,

Dilophonota *Burm.*

?
caicus *Burm.*
Sphinx caicus Cramer.
?
ello *Burm.*
Sphinx ello Linn.
alope *Burm.*
Sphinx alope Drury.
merianae *G. & R.*
Erinnyis mer. Grote.
oenotrus *Burm.*
Sphinx oenot. Cramer.
melancholica *G. & R.*
Erinnyis mel. Grote.
cinerosa *G. & R.*
Erinnyis ciner. Grote.
pallida *G. & R.*
Erinnyis pall. Grote.
guttularis *G. & R.*
Ancryx gutt. Walk.

3. This species is distinct from our United States Phil. pandorus (*Phil. satellitia*, ‡ Harris, Clem. et m.). I have as yet seen only specimens with the pink patch on the internal margin of secondaries—my var. posticatus—from Cuba.

Cautethia *Grote.*
noctuiformis *Grote.*
Oenosanda noct., Walk.

AEGERIIDAE.

Aegeria *Fabr.*
cubana *Grote.*
Sesia cubana H-S.

ZYGAENIDAE.

CASTNIINAE.

CASTNIINI.

Scirocastnia *Grote.*
tribuna *Grote.*
Ephialtias trib. Hübner.

EUDRIINI.

Euscirrhopterus *Grote.*
poeyi *Grote.*
Heterandra disparilis H-S.

ZYGAENINAE.

Horama *Hübner.*
diffissa *Grote.*
Horamia pretellus H-S.

Callicarus *Grote.*
pennipes *Grote.*
Horamia plumosa H-S.

Formiculus *Grote.*
pygmaeus *Grote.*

Setiodes *H-S.*
nana *H-S.*—
an. spec. prace.?

Burtia *Grote.*
rubella *Grote.*
Gundlachia cruenta H-S.

Euuonia *Hübner.*
insularis *Grote.*
Glaucopis eleguntula H-S.
nitidula *Grote.*
Glaucopis nitid. H-S.

Cosmosoma *Hübner.*
omphale *Hübner.*
selecta *Grote.*
Glaucopis selecta H-S.

Trichaea H-S.
pilicornis *H-S.*—
seticornis *H S.*—

Isanthrene *Hübner.*
chalciope *Hübn.*

Hippola *Walk.*
syntomoides *Walk.* (?)
Glaucopis synt. Boisd.
minima *Grote.*

Empyreuma *Hübner.*
pugione *Hübn.*
Sphynx pugione Linn.
Sphinx lichas ‡ Cram. nec. Fabr.

Lymire *Walker.*
melanocephala *Walk.*
Echeta albipennis H-S.
subochrea.
Correbia subochr. H-S.

Calonotos *Hübner.*
thetis *Hübner.*
Sphinx thetis Linn.
Sphinx lencus Cram.

Aclytia *Hübner.*
heber *Hübner.*
♂ *Sphinx heber* Cram.
♀ *Sphinx halys* Cram.

Uranophora *Hübner.*
chalybea *Hübner.*
Apostosia? terminalis Walk.

Ctenuchidia *Grote.*
virgo *Grote.*
Ctenucha virgo H-S.

Composia *Hübner.*
fidelissima *H—S.*

Sphaeromachia *Grote.*
cubana *Grote.*
Pericopis cubana H-S.

Agyrta *Hübner.*
auxo *Hübner.*—
Sphinx auxo Linn.

Melanchroia *Hübner.*
regnatrix *G. & R.*
cephise *Hübner.* (4.)
Phalaena chephise Cramer.
var. *Mel. fumosa* Grote.
Mel cephise Hubner Samml.

4. The specimens differ from Cramer's figure by being dull black instead of

geometroides *Walker*.
Glaucopis mors Lucas.

Apistosia *Hübner*.
humeralis *Grote*.
Ap'st. judas ‡ H-S. nec. Hübn.

Cydosia *Westwood*.
nobilitella *Westw*.
Tinea nob. Cram.

DESIDERATA. (5)
Glaucopis eximia *H S.*—
Charidea bicolor *H S.*—
Charidea cimicoides *H S.*—

BOMBYCIDAE.

LITHOSIINAE.

Torycus *H-S.*
tricolor *H S.*

Clemensia *Packard*.
albatula.
Me[illegible] albatula H-S.

Cytorus *Grote*.
latus *Grote*.

Crocota *Hübner*.
heros *Grote*.
disparilis *Grote*.
pallicornis *Grote*.

Utetheisa *Hübner*.
ornatrix *Hubner*.
Noctua ornat. Linn.
a. bella.
Tinea bella Linn.
b. speciosa.
Deiopeia spec. Walk.
γ. ornatrix.
Noctua ornatrix Linn.

ARCTIINAE.

Erithales *Poey*.
guacolda *Poey*.
proxima *Grote*.
var. praec.?

Spilosoma *Stephens*.
jussiaeae *Walk*.
Arctia juss. Poey.

Epantheria *Hubner*.
albicornis *Grote*.
cyaneicornis *Grote*.

Anumalo *Walker*.
impunctus *Grote*.

Ameles *Walker*.
gortynoides *G. & R.*
Carathis gortyn. Grote.

Eupseudosoma *Grote*.
niveum *Grote*.
? Charidea ? nivea H-S.

Nelphe *H-S.*
confinis *H S.*
coccinipes *n. s.* (6)

Robinsonia *Grote*.
formula *Grote*.

Euhalisidota *Grote*.
luxa *Grote*.
fasciata *Grote*.
scripta *Grote*.
alternata *Grote*.

blue black. These are Hübner's Mel. Cephise and my Mel. fumosa. I am now of opinion that they do not constitute a distinct species.

5. Species that I am autoptically unacquainted with, and which are briefly described under generic names used in too wide a sense to allow me to judge of the classificatory position of the insects.

6. NELPHE COCCINIPES, n. sp.—Smoky black, wings sub-hyaline. Legs inwardly red or crimson. Body plump; antennæ (♀) long, finely serrate to the tip. Head sunken; labial palpi short and improminent. Primaries subhyaline, smoky black, transversely broadly hyaline before the middle and again more narrowly superiorly beyond the disc. Nervular interspaces with longitudinal streaks of smoky black scales. Medially, about the cross vein, the wing is more closely scaled and darker. Secondaries subhyaline at base with diffuse blackish borders. Exp. 38 mm. Gundlach's No. 651.

Halisidota *Hübner.*
cinctipes *Grote.*
Hal. tessellaris‡ Walk. p.
strigosa *Walk.*
Hal. cubensis Grote.

Parcuchaetes *Grote.*(7)
cadaverosa *Grote.*
affinis *Grote.*

DASYCHIRINAE.

Euproctis *Hübner.*
argentiflua *Hübner.*
pygmaea *Grote.*
fumosa *Grote.*

Phryne *Grote.*
immaculata *Grote.*

PSYCHIINAE.

Thyridopteryx *Stephens.*
thoracica *Grote.*
Hymenopsyche thor. Grote.

Oiketicus *Guilding.*
poeyi *Lucas.*

Psychonoctua *Grote.*
personalis *Grote.*

Perophora *Harris.*
packardii *Grote.*

PTILODONTINAE.

Edema *Walk.*
insularis *Grote.*

Heterocampa *Doubleday.*
cubana *Grote.*

HEPIALINAE.

COSSINI.

Xyleutes *Hübner.*
piger *Grote.*

7. *Halesidota insulata,* Walk., belongs to Parcuchaetes, and may be the same as the Cuban species. The species belonging to this genus are near allied and difficult to define.

Descriptions of new North American DIURNAL LEPIDOPTERA.

BY WM. H. EDWARDS.

1. Pieris Calyce.
2. Argynnis Bischoffii.
3. Melitæa Sterope.
4. Melitæa Thekla.
5. Eresia Punctata.
6. Chionobas Stretchii.
7. Satyrus Gabbii.
8. Thecla Dryope.
9. Lycæna Mintha.
10. Lycæna Fulla.
11. Lemonias Palmerii.
12. Syrichtus Petreius.
13. Cyclopides Skada.
14. Hesperia Minima.

Pieris Calyce, n. sp.

Male.—Expands 1.7 inch. Upper side white with a slight yellow tinge; the base and costa of primaries and the base of secondaries, as well as nearly one-third the wing along median nervure to abdominal margin, densely sprinkled with black scales; on arc of primaries, a large, rhomboidal, black spot not reaching the costal edge; hind margin bordered by a series of serrated black spots, obsolete next inner angle, preceded by a curved black band of irregular width, and enclosing a series of serrated white spots. Under side of primaries suffused with yellowish green on outer limb; marked as above, the discal spot being replaced by greenish black, and the marginal spots by yellowish green, except that part of the curved band which lies in the upper and lower median interspaces, which is black.

Secondaries have the nervures throughout broadly bordered with dark yellow-green, so as nearly to cover the entire surface, leaving only narrow yellow stripes between the nervules, one in cell and another reaching from base to costal edge.

Body above covered with blue grey hairs; beneath greenish yellow; palpi yellowish tipped with black; antennæ white annulated with black; club black tipped with ferruginous.

From Nevada; in the collection of Henry Edwards, Esq.

Allied to *Sisymbri*, Bois., and *Vernalis*, Edwards, but readily distinguished from either by the extent of the black markings on primaries and the extent and intensity of the green shade of secondaries.

Argynnis Bischoffii, n. sp.

Primaries broad; costa slightly arched; hind margin unusually convex.

Male.—Expands 1.8 inch. Upper side dull fulvous, the base of primaries and the base and abdominal half of secondaries brown; primaries have the submarginal lunules and marginal band closely connected so as to form a broad black border, within which are eight fulvous spots from inner angle to apex; other markings as in the allied species, but delicate. Secondaries have a narrow black border on

which rest the lunules, but not forming one united band as on primaries; the median band formed of separated spots from costa to disco-central nervule, thence heavy, confluent, and lost on the brown marginal space; on the arc a large open curved mark; fringes pale luteous.

Under side of primaries pale cinnamon brown at base, fading to pale ochraceous on costa and apically; the markings of the upper side repeated imperfectly; hind margin brown, with pale lunules, not silvered, above which are serrated black spots, only distinct toward inner angle. Secondaries buff, inclining to ochraceous, mottled with greyish green; the spots paler, yellowish; the submarginal seven in number, broad, serrated; the second row of seven, the first, second and third subovate, of nearly equal size, the fourth minute, the fifth ovate, twice the size of the first, the sixth ovate, smaller than fifth, seventh semi-oval; the third row of three, and two in cell; another at base of sub-costal and a stripe at base of median.

Body black, with fulvous hairs; beneath grey fulvous; palpi fulvous; antennæ brown above, fulvous below; club black, tip ferruginous.

Female.—Expands 1.9 inch. Deeper colored, with a pale or faded space on inner margin; hind margin of primaries broader, rather erose within, the enclosed spots whitish, as also are those of secondaries. Under side as in male.

From 1 ♂, 1 ♀, received from James Behrens Esq. Taken in Aliaska, opposite Kodiak by M. Bischoff.

Melitæa Sterope, n. sp.

Male.—Expands 1.8 inch. Upper side blackish brown with white spots; primaries have two rows of small spots parallel to the margin; a third row, sinuous, of large spots, bifid anteriorly; two spots in and one below cell. Secondaries have a marginal row of large crescents or rounded spots, preceded by a second of points, and by a third of elongated spots crossing the disk; a white point in cell; fringes fuscous.

On under side of primaries the white spots re-appear, but diffused; hind margin bordered by a narrow ochraceous band on which rests a series of white crescents preceded by an ochraceous space; within this a row of white points; in cell a transverse white bar and a spot on costal nervure; a large spot behind cell; remainder of cell and base ochraceous. Secondaries have a marginal row of large white crescents, edged above and below with black, preceded by a white band which is limited anteriorly by a sinuous black line extending across the disk; this band contains a series of small ochraceous spots each enclosing a white point; across disk a second broad band of elongated white

spots also limited by a black line and divided unequally by another, obsolete in middle of disk; remainder to base ochraceous enclosing a transverse row of six white spots, each edged with black; shoulder white.

Female.—Expands 1.9 inch. Similarly marked except that the hind margins of upper side are bordered by ochraceous crescents and the second row of spots is partly replaced by same color; small patches also in cell and on costa of primaries

From 1 ♂, 1 ♀, taken in Oregon, and belonging to the collection of Henry Edwards, Esq.

MELITÆA THEKLA, n. sp.

Primaries long, narrow, much produced apically.

Male.—Expands 1.35 inch. Upper side pale ochraceous; primaries have a narrow black marginal border, dilated at apex, and enclosing in the upper median interspace a white point; a double sub-marginal row of irregular sized, but mostly subquadrate, concolored spots, separated by the black nervules and by broken transverse lines; on the arc an ochraceous, slightly bent bar edged by black; costal edge black; base partly black. Secondaries have a wider black border, within the anterior edge of which is a row of pale points and streaks; across the wing two irregular black lines, which, with the black nervules, divide the limb into two rows of spots, the sub-marginal subquadrate, the other elongate; beyond to the black base ochraceous, marked only by a black stripe across the cell; fringes black and white.

Under side deeper colored, marked as above; the border of primaries enclosing a complete row of white spots and points; that of secondaries enclosing large white spots, lunate at extremities, sub-quadrate otherwise; next preceding is a row of ochraceous spots corresponding to the submarginal of upper side, and followed by one of elongated white spots on black ground; then follows a broad ochraceous space, within which is a white bar in cell; at base four long white spots on black ground; shoulder and abdominal margin white.

Body above black, beneath yellow white; palpi white, blackish above and at tip; antennæ brown annulated with white; club ochraceous.

From the collection of the Agricultural Department, Washington, D. C. Taken by Dr. E. Smart in Southern California. This species belongs to the group of *Leanira*.

ERESIA PUNCTATA, n. sp.

Male.—Expands 1.2 inch. Upper side fuscous; primaries have a yellow subapical costal point, a large yellow spot divided unequally

by the second median nervule; another near upper corner of this last and anterior to it, divided by the discal nervule; a third divided by same and extending obliquely to costal edge; a fourth near the origin of the upper median nervule; and a fifth, small, in the lower median interspace and in a line with a bent yellow bar that crosses the cell; secondaries have a complete series of yellow submarginal crescents, preceded by a yellow streak reaching from abdominal margin to middle of wing; across the disk, from abdominal margin to sub-costal nervule a yellow band, broad in the middle, attenuated posteriorly; indistinct fulvous markings near base and a white spot on cell.

Under side of primaries fulvous next base, fuliginous on disk, grey sprinkled with ferruginous next hind margin; the spots as above, but in addition, two small white spots near base, and an obsolete submarginal line, or perhaps, series of crescents, the apical ones partially seen and whitish. Secondaries have the band indistinct, and the crescents obscured by brown; anterior to these an incomplete row of brown points; beyond the band an irregular brown line crosses the wing, from which to base are indistinct whitish markings.

Body above fuscous; beneath whitish; antennæ brown; club black fulvous at tip.

From Southern Arizona, taken by Dr. Palmer, and in the collection of the Agricultural Department, Washington, D. C.

CHIONOBAS STRETCHII, n. sp.

Male.—Expands 2.1 inches. Upper side pale ochrey brown, the basal portion clouded with dark brown; on primaries a wavy brown line crosses cell and is continued to sub-median; on outer limb a broad band of yellow white spots, the sub-apical one a streak only, the next three large, elongated, confluent, with outer edges lanceolate; the fifth separated by a space equal to its own width from the fourth and by a narrower space from the sixth, which is broad, subovate; the seventh sub-quadrate; on the second spot is a small black ocellus near apex, with white centre; on third and fourth a large black ocellus with white centre and a similar one on sixth. Secondaries have a broad whitish extra discal band, of which the anterior edge is wavy, the posterior serrate; near anal angle a small black ocellus, with white centre; margins edged by a dark line; fringes ochrey brown.

Under side in shades of grey and pale yellow brown, densely specked and streaked with dark brown; bands and spots nearly as above, but all edged by distinct brown lines; near base of secondaries a wavy transverse brown line; the apical ocellus wanting.

Female.—Exp. 2.3 inchs. Paler, similarly marked; no apical ocellus.

From 1 ♂, 1 ♀, Nevada, in the collection of Dr. Behr, and at his request named in honor of R. H. Stretch, Esq., of San Francisco.

SATYRUS GABBII, n. sp.

Male.—Expands 2 inches. Upper side blackish brown; both wings edged by a narrow paler band, preceding which is a black, somewhat incomplete stripe; fringes concolored; primaries have two large black ocelli, of equal size, with small white pupils and faint yellowish nimbus; secondaries have one similar ocellus, about one-third the size of the others, in first median interspace. Under side brown with a yellow tinge; the entire surface densely covered with abbreviated transverse dark brown lines; a common blackish wavy line crosses the disks; the ocelli on primaries as above, but each surrounded by a well defined yellow ring.

Secondaries have six ocelli, each with white pupil and each in distinct yellow ring, disposed in two groups of three each, the middle one of each group much larger than either of the others; marginal band and sub-marginal line as above, but more distinct.

Body and palpi concolored; legs paler; antennæ brown annulated with whitish; club ferruginous.

Female.—Expands 2.1 inches. Much paler, the ocelli of primaries within a broad yellowish clouded band; secondaries have two black points, one on either side the ocellus. Under side pale, with a grey tint, marked as in male.

Taken in Oregon by Prof. Gabb; 1 ♂, 1 ♀, in collection of Dr. Behr. Nearly allied to *Boopis*, Behr.

THECLA DRYOPE, Edwards.

Male.—Expands 1 inch. Upper side brown, faintly tinged with fulvous on disk of primaries; on the secondaries two fulvous spots at anal angle and traces of a third anterior to these; stigma on primaries large, oval, grey brown; a white line edges the margin before anal angle, and here the fringe is long, whitish, terminating in black; rest of fringe grey white.

Under side grey, with a yellow tint; both wings have obsolete discal streaks; a common median row of black points or small spots; a common sub-marginal series of spots, represented throughout by a few black scales only; the spot at anal angle and the third and fourth from angle showing a few orange scales posterior to the black.

Body above brown, beneath white; palpi white; antennæ black annulated with white; club black, ferruginous at tip.

Female.—Expands 1.2 inch. Primaries present more fulvous on disk; the spot at anal angle duller colored. Beneath similar to male; near anal angle traces of a large blue spot, scarcely to be distinguished without a glass.

From 1 ♂, 1 ♀, taken in Placer Co., California; in the collection of Henry Edwards, Esq.

The female was described by me in the Transactions Am. Ent. Soc. for Jan. 1870.

Lycæna Mintha, n. sp.

Male.—Expands 1.15 inch. Upper side dull pruinose blue, slightly fuscous on hind margins. Under side grey brown, with a tinge of blue at base; primaries have a large reniform discal spot, a row of six large black spots, the sixth duplex, all circled with white; the row from the third spot to inner margin straight, differing from most species in this respect; a submarginal row of fuscous points.

Secondaries have a large black spot on costa near base, a point on abdominal margin; a faint discal streak; a row of eight spots parallel to margin, the first six large, round, the seventh and eighth points only and back of the line; all circled with white; a submarginal row as on primaries.

Body dull blue, below blue-grey; legs white; palpi grey.

Female.—Same size. Upper side fuscous; beneath a shade darker than male.

From 1 ♂, 1 ♀, Nevada; in collection of H. Edwards, Esq.

Lycæna Fulla, n. sp.

Male.—Expands 1.5 inch. Upper side pale pruinose blue; hind margin of primaries fuscous; fringes fuscous next margins, white without. Under side white with a grey-brown tint; primaries have a black discal bar, a transverse row of six large black spots, the last being duplex, a submarginal row of small fuscous spots or points and traces of lunules along the margin.

Secondaries have two black spots near base, a faint discal stripe, a black stripe on abdominal margin, and a bent row of small black spots besides a duplex spot near anal angle much back of the line; a submarginal row and traces of lunules as on primaries.

Body above covered with silver blue hairs; beneath grey-white; legs same; palpi white, grey at tip; antennæ annulated white and black; club black, ferruginous at tip.

Female same size. Upper side pale brown, somewhat blue at base and on disk; primaries have a black stripe on arc; on secondaries traces of fulvous spots near anal angle. Under side more deeply tinted with brown; marked as in male.

California, 1 ♂, 1 ♀; from collection of Dr. Behr.

LEMONIAS PALMERII, n. sp.

Male.—Expands .9 inch. Upper side pale fuscous, slightly fulvous at base; hind margins narrowly edged by fulvous; a common sub-marginal row of white points, each edged posteriorly by black; a median row of white points or spots, those of primaries largest, the three next costa conspicuous and connected, all edged anteriorly by black; a third row crossing the ares, the spots on which are large, twice barred with black, the others only edged anteriorly by black; a fourth row quite at base edged on both sides with black; fringes fuscous.

Under side pale ochraceous; the spots dilated, taking the form of bands, except the submarginal, which are distinct, and on each wing edged posteriorly by brown points next inner angles only; the median band edged by a dark brown line, from which to base the ground is deeper colored.

From the collection of the Agricultural Department, Washington D. C. Taken by Dr. Palmer in Utah.

SYRICHTUS PETREIUS, n. sp.

Male.—Expands 1.1 inch. Upper side fuscous, spotted with white; near base of primaries a spot on inner margin, another at origin of upper median nervule; a compressed bar across cell and a curved line beyond, the two partly enclosing a round fuscous spot; on costa, crossing the sub-costal nervules, a long, rectangular white spot, followed at a slightly obtuse angle, by four large sub-quadrate spots reaching from near hind margin to a point below the cellular bar, and thence by two small spots perpendicular to inner margin, the whole forming a zigzag band completely crossing the wing; on the margin a series of obsolete points and spots. Secondaries have a white point near base and a conspicuous marginal series of spots, of which the two at outer angle are largest, both excavated posteriorly; the others more or less lunate; on the disk a large spot followed by three or four smaller, and together with the foremost marginal spot forming a straight band across the wing; fringes fuscous and white.

Under side grey brown, the spots as above, but those next base dilated and the marginal indistinct, nearly lost in the ground color.

From Nevada; received from Henry Edwards, Esq.

Cyclopides Skada, n. sp.

Male.—Expands 1.05 inch. Upper side dark brown, nearly black, spotted with ochraceous; primaries have two minute submarginal spots opposite the cell; a median row of larger size, long and mostly angular, extending quite across the wing excepting against the two submarginal spots; a large rectangular spot at outer end of cell, beneath the lower inner angle of which is a small triangular spot; along the hind margin faint traces of points or spots, scarcely more than a few scales, except at apex, where are two small clusters of scales. Secondaries have a submarginal series of points, a large sub-rectangular spot on middle of disk; against this, towards abdominal margin, a small oval spot; another oval of rather smaller size in middle of cell; fringes pale brown.

Under side of primaries ochraceous from base to outer edge of median row of spots, which are enlarged, confluent; within this ochrey space is a small oval black spot in cell, another near origin of first median nervule, and a large rectangular black spot beneath the last in submedian interspace; the interval in ochraceous median row black as is also the space between that row and the marginal spots, which are distinct; the two submarginal spots as on upper side. Secondaries of a darker or brownish shade; the marginal and submarginal rows complete, the spots being small, of nearly equal size and mostly sub-rectangular; the discal spots repeated, slightly enlarged, with black edges, and in addition a similar oval spot on abdominal margin against the first oval named, and another, larger, on costa against the cellular spot; all these spots of a paler shade than the ground color, whereas the marginal rows are concolored on a darker ground.

Received from Mr. Jas. Behrens, and taken at Kodiak by M. Bischoff. This species is allied to *Mandan*, Edw.

Hesperia Minima, n. sp.

Male.—Expands .65 inch. Upper side wholly pale, glossy ochraceous; immaculate; costal edge of primaries black; base of same wings slightly and of secondaries more largely sprinkled with black; fringes concolored.

Under side a shade paler; base of primaries black projecting somewhat on inner margin.

Body above black; sides of abdomen ochraceous; beneath, thorax and abdomen yellow white; palpi same; antennæ brown, club ochraceous.

From Waco, Texas; taken by G. W. Belfrage, Esq.

On GRAPTÆ INTERROGATIONIS and FABRICII of Edwards.

BY J. A. LINTNER.

In a paper published by Mr. Edwards in the Transactions of the Entomological Society, Vol. III. No. 1, entitled "*Notes on Graptas C-aureum and interrogationis*—FAB.," exception is taken to my determination, as given in a late number of the Transactions, of the large red-wing Grapta as *interrogationis*, and the black-wing (*umbrosa*) as an undescribed species, and the conclusions are drawn by the writer, that the latter is the *interrogationis* of Fab., and the former, the *C-aureum* of the same author, which name being preoccupied, may therefore be designated as *Fabricii*. A careful consideration of the paper, fails to convince me of the propriety of these conclusions.

The uncertainty and confusion which attends the *C-aureum* of Fab., is almost without a parallel. In 1775, Fabricius gave one line and a half of descriptive text to a butterfly or to a figure of one which he had before him, having on its under surface a golden or a silver character in the form of a C or that of an interrogation point (probably the former), which was, or was supposed by him to be the *C-aureum* described by Linnæus in 1760: this determination would make of it an Asiatic Vanessa, now generally regarded as identical with the *Angelica* of Cramer. In 1781, in *Spec. Ins.*, it was again referred by him to the same species. In 1793, in *Ent. Syst.*, he continues the same reference, but complicates it by also referring it to a figure of a *C-aureum* given by Cramer in 1779 of an individual from Jamaica, and of a very different type from the Asiatic species.

In 1797, Abbot and Smith figure a *C-aureum* or "American Comma Butterfly," as occurring in Georgia and in Virginia, and unite under it both of the above species of Linnæus and Cramer, with this qualification: that inasmuch as "Fabricius, observing the tail to the hind wings of his species, reformed the Linnæan specific character," and "as the specimen of Linnæus has much less of a [caudal] projection, * * * * * * * * possibly the Asiatic kind may be distinct from the American."

In 1819, Godart regarded the *C-aureum* of Fabricius, as having been erroneously referred to the Linnæan Asiatic species, but as identical with the *C-aureum* of Cramer and of Abb., Sm., and made of it a male for an American species (assumed to be a female) described by Fabricius in 1798 under the name of *interrogationis*, retaining this name for the two "sexes" thus brought together. Of his "male" he

says, its under surface is "wood gray, undulated and variegated with brown,"—a description altogether too vague to enable us to determine the species which he had in view.

Boisduval and Leconte's *C-aureum*, throws no light upon the subject, but only additional obscurity. Their text calls for falcated wings, which their plate does not present: their synonymy embraces too much, and the specific characters which they give, appear to be borrowed from the three species with which we are now acquainted, and of which they speak as "varieties."

There is reason for much of this confusion, for in the *C-aureum* of Fab., we are burdened with a name, without the ability of knowing, after all our study, to what particular insect it properly belongs. The meagre descriptions in Syst. Ent. (1775), Spec. Ins. (1781) and Ent. Syst. (1793), which are the three that we have, are verbatim transcripts of the Linnæan description in Syst. Nat. (1760), with the exception of the substitution of "dentato-caudatis" for "angulatis." Of this latter text Mr. Edwards says, "the above indefinite description applies to either of our large species, or indeed, excepting the silver mark, to any Grapta then or now known." It follows therefore, that the Fabrician descriptions are, by Mr. Edwards, placed in the same category of inexplicable obscurity.

Although we are able to assert on the authority of Mr. Edwards, that the Fabrician descriptions of *C-aureum* are inadequate to indicate it, yet he claims (in lit.) that the author "has accurately described *both* of our species" (*interrogationis* and *umbrosa**), and maintains this view in the remarks and in the synonymy of the paper under consideration. As such accurate description of *interrogationis* is not to be found in the specific characters assigned to *C-aureum*, it follows that the evidence for the identity of the two which Mr. Edwards discovers, is to be sought extraneously, in some reference or by implication. The following are the three reasons advanced in the paper, to show their identity:

First: Fabricius in 1793, refers his *C-aureum* to Cramer's figures, which "purport to represent an American species" (Edw.).

Second: Fabricius in describing his *interrogationis* says of it, *nimis affinis P. C-aureum*. "Now Fabricius could not have said that his *interrogationis* was 'extremely like' *Angelica*, Cramer (that is *C-aureum* of Linnæus) therefore he must have intended [Mr. Edwards infers] to compare it with *C-aureum* of Cramer.

* These designations of the red-wing Grapta and of the black-wing, given in my former paper, are continued throughout this.

Third: "the words *glaucæ strigæ punctorum nigrorum* twice repeated * * * * * * * also determine this *C-aureum*."

To the above it may be answered:

I. Fabricius has in no instance given America as the habitat of his insect, but distinctly says of it "habitat in Asia." Before charging him with the grave error of assigning to one quarter of the globe what really came from the very opposite, there certainly should be stronger evidence of its American origin than a casual reference to Cramer's figures. These figures are so coarsely executed that it is proposed by Mr. Edwards to reject them: the description (if the few words relating thereto may be so called) is most indefinite; and the author expresses a doubt whether, although sent to him from Jamaica, it may not be the same as another species "represented on Plate V. fig. E, indicated as having come from China" (cited by Godart, Enc. Meth. p. 304, as *Vanessa Progne*). Even if we were to assume with Mr. Edwards the identity of the *C-aureum* of Fab. and of Cramer, the species of the former would not be determined thereby, for there is a strong probability that the latter does not represent our *interrogationis*, but will prove to be a southern form of Grapta, as yet unnamed.*

II. The inference from "*animis affinis* * * * *C-aureum*" might have been properly drawn, if it could be shown that there are only these two Graptæ closely resembling one another, either now known or hereafter to be discovered. On page 7 of his paper, Mr. Edwards notices "the remarkable resemblance between these species and *G. comma*." On the same page, he indicates a fourth species, *Dryas*, nearly allied.

Mr. Scudder, in the *C-aureum* of Abb. Sm. and Cramer has detected a fifth species. The careful study which our Diurnals have of late years received, has in several instances revealed undoubted specific characters, where formerly only varietal differences were thought to exist. Thus in Grapta, during the last eight years, from three old species, five others have been educed, while the same number of species of Nisoniades, have rewarded rigid scrutiny with an addition of six new forms.

In view, therefore, of the new species recently described, and the probability of other North American ones yet undetected, it must be

*Since the above was written, it appears from a notice in the Proceedings of the Boston Society of Natural History, vol. xiii, p. 276, that Mr. Scudder, from material recently obtained, has determined this species to be identical with that of Abb. Sm., and proposes for these forms the name of *G. Crameri*. Specimens of the species have been received by Mr. S. from Texas and other southern districts. If Fabricius is correct in his reference to Cramer's figures, then it appears that his *C-aureum* is equivalent to this newly detected species.

evident that we are not authorized to predicate of a butterfly, indicated a century ago in another country, by a few *generic* characters applicable (with a trifling exception) "to any Grapta then or now known," and unrepresented by even so much as an outline figure—that because it may not resemble a certain Vanessa, therefore it must be one of the two allied Graptæ with which we are at the time acquainted; or, as in another instance, to be referred to hereafter, that because we deem the evidence sufficient to show that another indefinite description does not refer to one of two interrogation-marked Graptæ, therefore the other must be the one intended. A specific determination made six months ago upon such a basis, would be already invalidated by the detection of Mr. Scudder's *Crameri*, and its validity for the future, would necessitate a favorable argument in its behalf, just so often as upon the wings of a new species, a silver query should obtrude itself.

III. The error of restricting the *glaucous shade* and the *black points* to *umbrosa*, thereby determining *interrogationis*, will be shown when discussing the former species.

That our *interrogationis* cannot be the *C-aureum* of Fabricius and Cramer, would seem to be evident from the following considerations:

It has not, as its characteristic feature of so great distinctive value as to suggest its specific name, a *golden* mark. Godart's *interrogationis* is "*argenteo-notatis.*" Boisduval and Leconte's C-aureum has "une tache *argenteé.*" Edwards critically written description of *Fabricii* gives it "an interrupted C *silver* spot." Of the numerous specimens reared by me from the larvæ, in which the hues are of their maximum brilliancy, none could with propriety be designated as *golden* marked—all are *silver*—although, when especially sought for, a slight yellowish tinge like that of german-silver can sometimes be detected.

The golden character required in *C-aureum* is a *C;* that presented by *interrogationis* is not a C, but an interrogation point: hence it follows from Mr. Edwards' argument that it cannot be the latter species, for he states that Boisduval and Leconte having described among the varieties of their *C-aureum*, those having "a silver spot sometimes *in form of a C* * * * * * * these authors seem to me to have included *Grapta comma* Harris, then undescribed, as a third species, that species being distinguished by an uninterrupted C, *a character unknown to me in the others;*"—i. e. if the mark indicated be a C, the species can neither be *interrogationis* or *umbrosa*. And yet we find no intimation in this paper, that *comma* may have been the veritable *C-aureum* of Fabricius, although we are shown how it combines the characters of *interrogationis* and *umbrosa*, in that its "largest speci-

mens are equal in size to the smallest of these; the form is sometimes that of one, sometimes of the other; the color of the upper side is between the two; the spots precisely the same; on the under side, the same words would describe the males of *comma* and *interrogationis* [*umbrosa*] varying only the shade of color; the lines, basal space, spots, dots, patches, stripes and metallic marginal spots are all the same except in color." (Edw.)

The *C-aureum* of Fabricius must be smaller than his *interrogationis*, for of the latter he writes "affinis P. C-aureo et *paulo major*." Our *interrogationis* is not only larger than *umbrosa*, but it is the largest known Grapta, for its expanse is, "♂, 2.5 to 2.7; ♀, 2.6 to 3 inches" (Edw.): while *umbrosa* averages ♂, 2.25; ♀, 2.50 inches. In order, therefore, that Mr. Edwards' determination of these species may be correct, it is required that we accept the larger one as the smaller of the two.

To regard *comma* as the *C-aureum*, Fab., would meet two of the preceding objections which effectually preclude *interrogationis*, but so long as from the insufficient data furnished us, we may not positively say what the species really is, it does not seem worth our labor to determine what it may possibly be.* Would it not be better wholly to reject it from our synonymy, than to give it place therein, with the unsatisfactory appendage of a query point.

If Mr. Edwards has erred in determining our *interrogationis* to be the *C-aureum* of Fab., then it follows that it may still be entitled to bear the name by which it has been so long known.

Notwithstanding our inability to decide positively as to Fabricius intending by his *interrogationis* our northern red-wing species, inasmuch as it has been generally known to entomologists by that name—has been repeatedly figured as such—as the description of Fabricius is applicable to it—and as the name belongs to one of the Graptæ, there would seem to be great propriety in our regarding it as *interrogationis*, FAB. To do so, will prevent the confusion which would attend the transfer of the name to another species—an annoyance to which it

* I am incorrectly quoted on page 2 of the paper under consideration, where it is given as my determination that "both Cramer's and Abbot's figures represent the male of the species which has a red upper surface and much falcated wings," and again on page 4, that in my opinion "the latter [*C-aureum*, Fab.] was intended [by Fabricius] to represent the male of the other species [*interrogationis*]." My having inadvertently written *interrogationis* instead of *C-aureum* on page 314, line 37, in Trans. Am. Ent. Soc. vol. ii, was doubtless the foundation of these inferences. I had not at the time, have not now, nor expect to have hereafter, any opinion as to what Fabricius' *C-aureum* represents.

would be proper to subject us, only in consideration of the warrant therefor, resting on no indefinite constructions.

If, however—in strict obedience to a law of zoological nomenclature, which demands that a name to have authority, must be accompanied by "a definition giving a distinct exposition of essential characters"—it should be deemed proper to deny to Fabricius the authority of the name, then our species should be known as *interrogationis*, Godart, for while that of Fabricius *may be* our red-wing Grapta, that of Godart given in his supplement, and quoted in vol. ii, page 318, of these Transactions, could be no other of the species now known to us, for his description of its coloration and ornamentation is so accurate as to leave no room for doubt. The *interrogationis* first defined by Godart, on page 302 of his volume, should probably be rejected, as it calls for the falcated primaries of *interrogationis*, and the blue-black secondaries of *umbrosa*—features which are not combined in any known species. Subsequently, finding himself in error, he gives in a supplement, another description marked *duplicata*, which seems to be intended not to supplement but to take the place of the former. It would have relieved us from some perplexity, had he presented the reason for this second description. It was evidently deemed by him to be quite important, for of the seventeen hundred and forty-nine species of Diurnals described in the volume, but four others are given in duplicate; of these we are told that two had been originally described from the male only, one from an imperfect specimen, of the other a wrong female had been given, but wherein the error of the former text of *interrogationis* consisted, we are left to conjecture.

The description of the *duplicata* covers both sexes, with some special features of the female particularized. There are no longer black hind-wings, and except that the expanse is rather limited, every word of it may be applied to our red-wing Grapta.

It is possible that all doubt existing with respect to this species, may yet be resolved, by the examination of the original Fabrician specimen, which Mr. Edwards states is still preserved in the collections of the British Museum, but of which he has been unable to obtain any representation or satisfactory information.

Having endeavored to show that there exists no good grounds for believing that our *interrogationis* may have been the *C-aureum* of Fabricius, we will next examine the reasons for the determination of Mr. Edwards, that *interrogationis*, Fab., is identical with my *umbrosa* and adduce some evidence against such determination.

The reasons as given in the paper, are two, the first of which is, that

Fabricius describes his species as "subtus glaucis." This, Mr. Edwards says, applies to the female *umbrosa* alone, of the males and females of the two species. If this were so, his determination might be admitted. But I have in my collection abundant material to prove conclusively, that either there is an error in his conception or restriction of "glaucis," or, as might naturally be expected from the "great variation" (Edw.) in *interrogationis*, the individuals which have come under his observation, are differently shaded from mine. I have now before me eighty-five *ex larvæ* specimens of *interrogationis*, and with no other motive than the proper solution of the question at issue, I affirm, that of the two species, the "*subtis glaucis*" applies in a greater degree to *interrogationis* than to *umbrosa*. I have placed my specimens of these two species before gentlemen familiar with the colorational terms employed in natural history, with the request that they would indicate which of the four (counting sexes) the best met their conception of "glaucous," and in each instance, the females of *interrogationis* were unhesitatingly designated. I would premise, that at this remote day, we should be at fault were we to decide upon the precise shade which Fabricius intended by *glaucis*, of the many which its present range embraces, whether bluish-grey, grayish-blue, bluish, sea-green, dull green, or a bloom like that upon a plum or cabbage-leaf. Although the shade by which Mr. E. prefers to define *glaucis*, might not be selected as the best expression of the suffusion of *interrogationis* it is quite certain that its peculiar bloom at once calls up to the mind of the observer, a superficial deposit like that upon a cabbage-leaf, which a touch of the finger would serve to remove.

The second feature of Fabricius' description, cited to prove his *interrogationis* to be *umbrosa*, is the "striga punctorum nigrorum," and in reference to these, it is asserted that "*umbrosa* of the two species, is the one distinguished *in both sexes* by a band of *distinct black points crossing both wings*." True; but Fabricius does not claim to describe both sexes, and indeed Edwards asserts that he knew but one; nor does he state that the black points are *distinct*, and that they *cross* both wings in a band, but simply that there is "a row of black points." This requirement is fully met by *interrogationis*, and to show more is superfluous. Even in the female a row of points is visible, and might properly be made a feature in its description, when compared with a Vanessa where they are wanting. These points, instead of being of specific value, are a generic feature, occurring in the Graptæ, in *Faunus*, *comma*, *Dryas*, *interrogationis*, *umbrosa* and *J-album* alike.

If then, the glaucous shade and black points common to both of the

species under consideration, fail to determine to which of the two the disputed name may pertain, an additional consideration will serve to show that it cannot be applied to *umbrosa*, unless we consent to set aside Fabricius' description as of no determinative value. He says of it, "wings, tailed, *fulvous*, spotted with black." This cannot possibly be made to cover *umbrosa*, in which the anterior wings only are fulvous, while the posterior ones are *black*. We revere the honored name of Fabricius and freely recognise the debt we owe him for his untiring, life-long entomological researches, and the voluminous records of his labors left us. Would it not, therefore, be most unkind to charge upon him the inexcusable blunder of writing *fulvous*, where it should have been *black?* And if, as the result of inaccurate diagnoses and erroneous reference on his part, another of his species requires to be re-named, might not the bestowal of his name upon it, in the errors which it commemorates, be regarded as ironical rather than complimentary? It cannot be urged that the extreme brevity of his descriptions—rarely equaling and never exceeding three lines—prevented the distinction being made between the anterior and posterior wings, for in a volume before me, I find in his descriptions "anticis" and "posticis" occurring, as often as the discrimination seems necessary.

Unable to discover, upon a careful review of former examinations, and a full consideration of Mr. Edwards' paper, any good reason for the belief that Fabricius or any other author had described *umbrosa*, it is with regret that I find myself compelled to differ from the determinations of one, whose studies, specially directed for years to our Diurnals, have eminently qualified him for the solution of questions of doubtful synonymy, and to whom we are indebted, as the fruit of such studies, for a delineation of "American Butterflies" so beautiful and faithful, as to win for the author from a distinguished source, the appellation of "the AUDUBON of Butterflies." From such authority, it may be deemed presumptuous in me to appeal.

N. Y. State Museum of Nat. Hist., November, 1870.

Descriptions of New Species of DIURNAL LEPIDOPTERA found within the United States.

BY W. H. EDWARDS.

1. Anthocaris Hyantis.
2. Phyciodes Opseis.
3. Phyciodes Canace.
4. Thecla Cygnus.
5. Thecla Castalis.
6. Lycæna Helios.
7. Lycæna Viaca.
8. Lycæna Ardea.
9. Lycæna Glaucon.
10. Lycæna Gyas.
11. Lycæna Fea.
12. Chrysophanus Ianthe.
13. Charis Nemesis.
14. Euptychia Rubricata.
15. Cœnonympha Ampelos.
16. Syrichtus Oceanus.
17. Stereoptes Skada.
18. Heteropteris Arene.
19. Hesperia Procris.
20. Hesperia Tamenund.
21. Hesperia Ophis.

Anthocaris Hyantis, n. sp.

Male.—Expands 1.5 inch. Upper side sordid white, the bases of wings largely powdered with grey; costal edge of primaries specked with grey-brown; on arc a narrow, slightly sinuous grey-brown bar reaching costal edge; apex and upper half of hind margin bordered by a double row of grey-brown spots, the interstices being white; secondaries immaculate. Under side white; primaries have the discal bar repeated faintly; apex slightly washed with yellow-green and somewhat colored by scattered brown scales.

Secondaries covered with confluent patches of yellow green, powdered with grey.

Body covered with grey hairs; beneath, abdomen white, thorax greenish white; palpi same; antennæ and club whitish.

Female.—Expands 1.8 inch. Upper side similar to male; the anterior edge to subcostal nervure crossed by brown streaks instead of being specked; discal bar much widened at each extremity and terminating at subcostal; the apical and all the marginal nervules bordered with black near the extremities, and at apex preceded by an oblique stripe from costa to middle of margin leaving a large white rounded patch on costa. Secondaries delicate, showing distinctly the markings below.

On under side primaries have a reniform discal spot enclosing a white streak on the arc; a straight stripe, yellow green powdered

with grey, starting from costa near apex terminates a little within the middle of hind margin; two similar abbreviated stripes precede this on costa; the color of patches on secondaries more intense.

Taken at Mendocino, Cal., by R. H. Stretch, Esq., and in the collection of Mr. Henry Edwards.

Phyciodes Orseis, n. sp.

Male.—Expands 1.6 inch. Upper side fuscous spotted with fulvous and rusty white; primaries have a marginal series of lunules, obsolete except the middle one; a submarginal row of points, followed by a macular rusty white band; on arc a fulvous patch, a broad bar in cell; three or four indistinct fulvous patches in cell near base and a whitish spot below. Secondaries have a complete marginal series of whitish lunules each resting on a faint black spot; a submarginal row of fulvous spots nearly replaced by black, showing only fulvous lunules on inner edges; median band fulvous; a fulvous curved bar on arc and spot in cell; fringes fuscous and white.

Under side pale ochraceous, darkest at base of primaries; at inner angle a blackish streak and a small brown patch on middle of inner margin; hind margins of both wings edged by a crenated fulvous line, duplex on middle of primaries, and on whole of secondaries, and in upper median interspace of these last enclosing a large pale lunule; primaries mottled with shades of fulvous; secondaries from base to middle of disk reticulated with fulvous lines, limited without by a wavy line; beyond this a cloudy stripe and a row of brown points.

Body above fuscous, below pale ochraceous; legs ochraceous; palpi same, fuscous above and with fuscous hairs in front; antennæ fuscous; club black tipped with fulvous.

Female.—Expands 1.9 inch. Upper side similar to male; under side of primaries fulvous mottled apically and on inner margin with yellowish; the marginal lines complete, duplex, enclosing yellow lunules; on secondaries the pale spot on margin is white or silvery; these wings yellowish clouded with brown, and the reticulated lines at base brown.

From Mt. St. Helena, Napa Co. California, taken by Mr. Henry Edwards. The largest of the Pacific species.

Phyciodes Canace, n. sp.

Male.—Expands 1.3 inch. Upper side fuscous marked and spotted with fulvous, as in *Montana*, Behr; the third band from hind margin of primaries pale colored, rather yellowish; under side of primaries

pale ochraceous at base, largely ochraceous at apex and on costal margin; disk fulvous; a black subapical bar on costal margin and a second reaching from costa to median nervure, beyond extremity of cell; a large blackish patch at inner angle projecting anteriorly a streak which curves to middle of hind margin, partially replaced by fulvous; a subovate black spot on inner margin.

Secondaries wholly pale ochraceous, immaculate except a submarginal row of brown dots distinct from abdominal margin to middle of disk, beyond obsolete.

From Southern California. Taken by Dr. Smart, and in the collection of the Agricultural Department.

This species on the under side much resembles *Batesii*, Reakirt, but wants the reticulations which ornament that species; the form of all the black markings on under side of primaries is also different. On the upper side the surface presents much less black. It is nearest to *Montana*, of the Pacific species.

THECLA CYGNUS, n. sp.

Size and form of *Acadica*.

Female.—Expands 1.2 inch. Upper side brown; primaries have a dark costal and marginal border; next preceding this last the limb is suffused with fulvous which fades on the disk but leaves a tint nearly to base. Secondaries have a long fulvous patch near anal angle extending to middle of hind margin, showing a large bright lunule in submedian interspace; the anterior tail short, a mere point, the posterior long, black tipped with white and edged with same color on the posterior side from base nearly to the white tip; fringes next anal angle grey, otherwise luteous.

Under side uniform pure brown; primaries have a nearly obsolete submarginal series of narrow fulvous lunules edged anteriorly by black streaks; a median row of small black spots or points; a brown bar on arc. Secondaries bordered by deep orange lunules, the second from anal angle nearly replaced by brown and densely covered by grey scales with a narrow fulvous edge anteriorly; the third large with a fuscous edge next margin, the fourth small, nearly replaced by fuscous, the fifth and others to outer angle represented by a few fulvous scales only; each of these surmounted by a black streak followed by a white streak; the median row of spots large, rounded, edged with whitish; a brown bar edged by darker lines on the arc.

Body above brown, beneath grey; legs grey; palpi white, black in

front and at tip; antennæ black annulated with white; club black, tip fulvous.

Taken in Nevada by Mr. Henry Edwards.

THECLA CASTALIS, n. sp.

Size and form of *Smilacis*.

Male.—Expands 1.1 inch. Upper side yellow brown; both wings have broad fuscous costal and hind margins; stigma small, oval; secondaries have the yellow disk slightly obscured by fuscous; the outer tail very short, the other long, fuscous tipped with white. Under side of primaries green at base and on apical half of hind margin; rest of wing castaneous; the marginal edge bordered by an interrupted white line; on the disk, an abbreviated white band, commencing on costa, broken into spots by the nervules.

Secondaries green; hind margin edged by a continuous white line, on which, near anal angle, rest three blue grey lunules, the middle one surmounted by a black dot, and all three by black lunules preceded by white points; across the disk a complete sinuous row of white spots, edged anteriorly by castaneous; a spot in cell and another above, both edged posteriorly by castaneous.

Female.—Expands 1.2 inch. Similar to male, except that the color of upper side is castaneous instead of yellow; on under side the green shade is faint, obscured by brown.

From Mr. G. W. Belfrage. Taken near Waco, Texas.

LYCÆNA HELIOS, n. sp.

Male.—Expands 1.1 inch. Upper side dull pruinose blue; hind margin of primaries fuscous, of secondaries edged by a black line; fringes long, soiled white, at apex of primaries partially replaced by fuscous.

Under side grey brown, bluish at base of secondaries; both wings have a submarginal series of small black lunules, and a median row of rounded black spots; those of primaries large, the first on costa nearly or quite obsolete; those of secondaries minute on a white ground, but usually about half the size of the smaller on primaries and uniform; on arc of primaries a large oval black spot, of secondaries a faint streak; a point in cell and another on costal margin; all the lunules and spots faintly edged with white.

Body above blue, abdomen beneath soiled white; thorax grey white; palpi same with long black hairs on front; antennæ annulated black and white; club black, tip fulvous.

Female.—Same size. Dull blue, obscured by pale fuscous; on arc of primaries a faint streak; hind margin of secondaries bordered by indistinct brown oval spots.

Under side clear drab; all the lunules and spots distinct and not edged with white.

Three ♂, one ♀, from California. H. Edwards.

Lycæna Viaca, n. sp.

Male.—Expands 1.4 inch. Upper side pruinose blue with a metallic lustre, somewhat obscured by fuscous on secondaries; hind margin of primaries largely bordered by fuscous, of secondaries narrowly; fringes of primaries white, black at ends of nervules, of secondaries white. Under side grey brown mottled with calcareous white; primaries have a submarginal series of brown lunules, not distinct apically; a median row of large round black spots, the first four from costa forming an arch, the fifth much anterior to fourth and widely separated from it; the sixth duplex; all edged with white; on the arc a subreniform black spot and one nearly similar in cell.

Secondaries have a submarginal series of brown lunules; a median sinuous row of round black spots, less conspicuous than those of primaries, except the first, fourth and last; the second, fifth, sixth and seventh half the size of the first; on arc an indistinct bent streak; a small black spot in cell, a large one on costa and a third below cell; fringes beneath on both wings cut by brown.

Body above blue, beneath, thorax blue grey; legs back and white; palpi white, black at tip and on upper side; antennæ annulated black and white; club black, tip fulvous.

From collection of Mr. Henry Edwards. Taken in the Sierra Nevada, Cal.

Lycæna Ardea, n. sp.

Male.—Expands 0.95 inch. Upper side violet blue, grey blue when seen obliquely; hind margin of primaries very narrowly edged by fuscous; of secondaries by a black line; fringes long, white.

Under side fawn color, secondaries tinted with blue at base; primaries have a large black reniform discal spot, edged with white; an imperfect transverse median row of four black dots, surrounded by white, those at either extremity obsolete; faint traces of a submarginal series of brown lunules. Secondaries have traces of a similar series, still less distinct; no median spots; a large white patch onarc.

Body above concolored; beneath white; legs white; palpi white tipped with grey; antennæ annulated white and black; club black, tip pale ferruginous.

From Nevada, vicinity of Virginia City. Taken by Mr. Henry Edwards.

Lycæna Glaucon, n. sp.

Male.—Expands 0.95 inch. Upper side pruinose blue, color of *Comyntas*; primaries have a blackish border to hind margin of equal width throughout and even edged within; secondaries have a rather wider border, lunate within and less distinctly defined, the two lunations before anal angle surmounted with fulvous; fringes short, white, cut with black at ends of nervules on primaries. Under side grey brown, tinted with blue at base of secondaries; primaries have a marginal series of brown spots or imperfect lunules, preceded by a submarginal series of larger, distinct, blackish spots, the two next inner angle suffused with fulvous; a median row of large blackish spots, the uppermost one much advanced on costa; a subreniform spot on arc and a smaller spot in cell, both blackish.

Secondaries have a distinct marginal row of round brown spots, preceded by a second similar row, but which are partly lost in a bright orange stripe that occupies the space between the two rows from anal angle nearly across the wing; the median row similar to that of primaries; a bent bar on arc; two rounded blackish spots a little posterior to this bar and between it and costa; a third spot on costa nearer base and a fourth below cell.

Body above black, covered with blue hairs, beneath grey; palpi white with long black hairs at tip; antennæ annulated black and white; club black, tipped with white.

Female.—Same size. Upper side brown; hind margin of secondaries bordered by rounded indistinct spots of darker brown, which for two thirds the distance from anal angle are partly enclosed and surmounted by a fulvous bars. Under side as on male.

Allied to *Battoides*, Behr. From 2 ♂, 1 ♀, taken by Mr. Henry Edwards, in Nevada.

Lycæna Gyas, n. sp.

Male.—Expands .95 inch. Upper side pale violet blue, immaculate except a fuscous point near anal angle. Under side pale brown with a wash of whitish; primaries have a faint discal bar, and a straight row

of spots across the wing, the second and fourth back of the line; all edged with white; on margin traces of lunules.

Secondaries have a similar discal bar and a median row of spots; a small round fuscous spot in cell, two others on costa, one near middle the other near base; a faint row of spots on hind margin, of which the two next anal angle are distinct, blackish.

From Arizona, taken by Dr. Palmer, and in the collection of the Agricultural Department.

LYCÆNA FEA, n. sp.

Male.—Expands .6 to .7 inch. Upper side brown, sometimes red-brown, blaish at base of both wings, and slightly fuscous along hind margins; secondaries bordered by a series of round fuscous spots; fringes long, pure white, except at inner angle of primaries and against the lower median interspace, where they are fuscous.

Under side of primaries dark grey at base without markings, fulvous on disk crossed by interrupted white streaks; the margin grey, presenting a series of obsolete lunules above each of which is a white border forming a broken line like those on disk. Secondaries dark grey at base, paler grey over part of disk, then brown, followed by a broad white sub-marginal space; the base marked by three fuscous points placed transversely, and the brown disk crossed by white streaks as on primaries; hind margin bordered by a row of black spots, of which the first, next anal angle, is duplex and covered with metallic green scales; the next four large, dead black and only metallic at their bases; the next two wholly covered with metallic scales.

Female.—Same size, paler colored above, marked as the male.

From several specimens sent me by Mr. G. W. Belfrage, and taken near Waco, Texas.

This minute species is allied to *Exilis*, Bois., of California.

CHRYSOPHANUS IANTHE, n. sp.

Male.—Expands 1.3 inch. Upper side pale glossy fulvous; both wings have straight black discal bars; hind margin of secondaries bordered by separated lunular brown spots preceded and enclosed anteriorly by a coppery band; otherwise immaculate excepting that the spots of lower surface are partially seen through the wings.

Under side pale buff much powdered at base with grey; primaries have a marginal series of rounded brown spots, obsolete apically, suffused near inner angle with fulvous; a median tortuous row of brown

spots or points; a bar on arc, a large round spot in cell besides a point nearer base, and a large round spot below cell. Secondaries have a marginal series of orange crenations, obsolete toward outer angle; a median row of black dots; an obsolete discal streak, a point in cell and another below.

Body above fuscous, below buff; thorax white; palpi white, grey in front; antennæ fuscous; club black, tip ferruginous.

Female.—Expands 1.4 inch. Upper side bright glossy fulvous; primaries have a broad fuscous hind margin; a median row of ill-defined fuscous spots; a subovate fuscous spot on arc, a round spot in cell and another below. Secondaries have a similar margin but cut by fulvous crenations from anal angle to middle; a median row as on primaries, a bar on arc and a round spot in cell.

Under side as in male.

From Nevada, taken by Mr. Henry Edwards. This species takes the place of *Helloides*, its nearest ally. The markings of the females and the color of upper side of these species are much alike but the color of under side is different, and the males are unlike in color of both surfaces.

Charis Nemesis, n. sp.

Male.—Expands 1 inch. Upper side pale brown, the basal half a shade darker and limited on middle of both wings by a wavy outline.

Under side pale fulvous; both wings crossed by two marginal lines of plumbaginous point; a third line of black, non-metallic, points crosses the disks and a fourth is basal.

From Arizona. Taken by Dr. Palmer, and in the collection of the Agricultural Department.

Euptychia Rubricata, n. sp.

Male.—Expands 1.4 inch. Upper side light brown; a large reddish patch on disk of primaries, occupying the outer and lower corner of cell and nearly the whole of the median interspaces to marginal lines; a faint tinge of same color on disk of secondaries; hind margins edged by a dark brown line, preceded by a second and a third at equal distances, the last slightly crenated; at apex of primaries a subovate black spot in which are two pearly foci and around which is an ochraceous ring; a similar spot near anal angle; fringes concolored. Under side grey brown, the red patch diffused and brighter colored; besides the three marginal lines, which are distinct,

are two other lines crossing both wings; the exterior one on primaries ferruginous, commencing on costa a little anterior to the apical spot and turning irregularly to the crenated line next inner angle; the second of these two lines only distinct in cell; on secondaries the exterior line terminates at and joins the extremity of the crenated line; the interior is wavy and distinct throughout; primaries have the apical spot as above, the ring yellowish and partly enclosing a pearly spot in the upper discoidal interspace; a similar pearly spot just below.

Secondaries in addition to the anal spot have a similar one near outer angle and two small pearly spots in yellow rings between these, besides a third on costal edge.

Body above brown; beneath, thorax grey; legs grey; palpi whitish fuscous at tip; antennæ fuscous and white, club red.

Female.—Expands 1.6 to 1.8 inch. Similar to male.

From Mr. G. W. Belfrage. Taken near Waco, Texas.

CŒNONYMPHA AMPELOS, n. sp.

Male.—Expands 1.3 inch. Upper side bright, glossy ochraceous; immaculate; fringes concolored.

Under side nearly same shade, paler and changing to buff at apex of primaries; on secondaries slighly paler at outer angle and elsewhere much powdered with brown atoms; a pale straight ray from costal edge of primaries nearly crosses the wing; secondaries have a similar ray, tortuous, interrupted in the upper median interspaces, not quite reaching abdominal margin; both wings immaculate.

Body fuscous covered with ochraceous hairs; beneath yellowish and grey; palpi grey; antennæ annulated black and white; club black, tip ferruginous.

Female.—Same size, slightly paler; otherwise like male.

From 1 ♂, 1 ♀. Oregon. Allied to *Inornata*, Edw.

SYRICHTUS OCEANUS, n. sp.

Female.—Expands 1.6 inch. Upper side soiled white, pale brown at bases of wings; apex of primaries largely covered with same shade extending to cell, suddenly narrowing at discoidal nervule and continuing with slightly diminishing width to inner margin; enclosed on this border is a series of whitish lunules and a subapical oblique streak. Secondaries clouded with brown along abdominal margin and on disk;

hind margin narrowly edged with brown, enclosing a series of whitish serrations on the margin.

Under side of primaries white discolored with brown on costal and hind margins; a subapical brown patch on costa preceded by a short oblique brown bar; secondaries whitish brown, largely brown at base and along basal part of costal margin with a connected patch on disk; hind margin broadly edged by a border a shade darker than the ground color and straight edged within from outer to anal angle.

From Arizona. Taken by Dr. Palmer, and in the collection of the Agricultural Department.

STEREOPTES SKADA, n. sp.

Allied to *Mandan*, Edw.

Male.—Expands 1.2 inch. Upper side dark velvety brown spotted with deep ochraceous; primaries have a submarginalr ow of indistinct points; a straight median row of large spots, of which the most conspicuous is on the costa divided by the black nervules, and the two next succeeding are small, back of the line and near the outer row; the fourth spot is sagittate, the fifth subrectangular, sixth minute and seventh a streak on inner margin; in cell a large subrectangular spot connected at its lower inner angle with a small triangle. Secondaries have the submarginal row of points more distinct; a large rounded spot on middle of disk and a small oval between this and abdominal margin; a third small spot in cell near base; fringes yellow brown. Under side of primaries ochraceous from base to middle of wing and connected by the ochraceous median nervule with the second row of spots, which are much enlarged; the marginal spots distinct; the space between these and the second row as also the hiatus in this last black; a black spot in cell, one in first median interspace beyond the second row and another of larger size below this.

Secondaries brownish yellow; the marginal spots as on primaries and in addition a second, or submarginal row of similar spots; besides the spots of upper side, which are repeated, is an oval on abdominal margin and a long oval on costa; all these spots except the outer rows of a yellowish tint.

From Kodiak. Taken by M. Bischoff.

HETEROPTERUS ARENE, n. sp.

Male.—Expands .9 inch. Upper side glossy honey yellow; hind and inner margins of primaries largely bordered by fuscous; costa edged by same color; the outer extremity of cell bordered by two

short fuscous lines one of which covers the arc; secondaries have a broad fuscous costal border, and a narrow edge of same color along hind margin; fringe concolored.

Under side of primaries a lighter shade, fuscous on inner margin. Secondaries still paler, immaculate.

From Arizona. Taken by Dr. Palmer, and in the collection of the Agricultural Department.

HETEROPTERUS PROCRIS, n. sp.

Male.—Expands .9 inch. Upper side bright, glossy honey yellow; costal border of secondaries fuscous near base; on disk of primaries below cell, a straight black streak on a ridge raised above the surface; fringes fuscous at apex of primaries, otherwise yellowish.

Under side of primaries nearly same shade as above, of secondaries paler; at base of primaries a black patch not reaching costal edge, extending half way along inner margin and projecting a short streak towards the disk.

Body above concolored, beneath whitish; palpi yellow white; antennæ fuscous above, yellow below, club yellow.

Female.—Same size. Upper side a shade darker than male; the nervules more or less fuscous, and secondaries much obscured by fuscous at base; a black line along lower side of cell of primaries corresponding to the stigma of the male; both wings edged by a fuscous line.

On under side of secondaries the yellow color only obtains next abdominal margin; rest of wing yellow brown, with a pale, whitish, streak running from base to middle of hind margin.

From several specimens sent me by Mr. G. W. Belfrage, and taken near Waco, Texas.

HESPERIA TAMENUND, n. sp.

Male.—Expands 1.6 inch. Upper side dark brown with a purple tint, disk of primaries crossed by a broad brown band, commencing on costa a little beyond the middle from base, running back obliquely half way to hind margin, then bending at a right angle and reaching middle of inner margin: primaries also have a submarginal indistinct macular band, a shade paler than the ground color. Secondaries blackish crossed near base and on disk by two rows of indistinct black spots; fringes black.

Under side brown, tinted with purple, immaculate: apex of primaries greyish.

Body, legs and palpi concolored; antennæ and club blackish.

Female—Expands 1.8 inch. Similar to male.

Taken near Waco, Texas, by Mr. G. W. Belfrage.

HESPERIA OPHIS, n. sp.

Primaries long, pointed, narrow, excavated on costal margin.

Male.—Expands 1.3 inch. Upper side brown with a bronze lustre; primaries have three yellowish points on disk in the median interspaces forming a line nearly parallel to costal edge, and a fourth spot between the uppermost of these and costa; stigma small, oval and parallel to costa; fringes pale brown.

Under side nearly same color, much powdered with bronze atoms on costal margin of primaries and at base and along the nervules of secondaries; the points on primaries expanded into small spots, a fifth being found on the cell; on disk of secondaries a white stripe following discoidal nervule, and characteristic of this species.

Female.—Same size, color and markings.

From Apalachicola, Fla. Taken by Dr. A. W. Chapman.

NOTE.—While the foregoing descriptions were passing through the press, I received the following letter from Mr. A. G. Butler. "Thecla Castalis is Papilio Damon, Cramer, IV, pl. 390. The figures are antiquated, but fig. C. exhibits the golden yellow of upper side and the markings of the under side in fig. D. occupy the same positions. An example in the British Museum is labelled "United States," but on turning to our Register, for 1846, I find a note by E. Doubleday as follows.—'This is an entire series of the species collected by me in the U. S., during the years 1837 and 1838 *with a few additions from other sources &c.*'" Cramer gives Virginia as a locality of Damon but this is undoubtedly erroneous.

"Euptychia rubricata is quite new. It is allied to E. Phares, Godart, but differs above in red patch of primaries (indicated by an ochreous suffusion in Phares) and in single ocellus of secondaries (Phares always exhibits from 4 to 6 ocelli above); below in the red on primaries and the bands of secondaries, which are wider apart than in Phares, and in the far more conspicuously silver pupilled ocelli. I have never seen Phares from Mexico."

Synopsis of the MUTILLIDÆ of North America.

BY CHAS. A. BLAKE.

The object of the present paper is to bring together as far as possible, all the known species belonging to the family Mutillidæ found in North America, with descriptions also of such as appear to have been hitherto undescribed.

The species, of which this family is composed, are, unlike the Formicidæ or social ants, solitary in their habits, and are generally found in hot, sandy situations. They consist of two sexes—male and female. The males have distinct, more or less prominent ocelli, are winged and occasionally frequent flowers; while the females are destitute of wings and in some genera of ocelli, and are armed with a powerful sting; the legs are very robust and fitted for burrowing, the tibiæ being more or less spinose and the tarsi ciliated; they are found on the ground and run with great rapidity.

The genus *Mutilla* is probably the most extensive of any in the Aculeata, and are cosmopolitan in their habitat, being found in all countries, from the torrid to the frigid zones. The species present remarkable differences in the form of antennæ, eyes, head, thorax, neuration, and first segment of abdomen, which conveniently form types for sub-generic divisions. In the female the head is transverse, ovate or quadrate, sometimes enormously developed and armed beneath with two or more formidable spines; the ocelli always wanting; the eyes ovate, or more generally small, round, and most frequently apparently simple, exhibiting no traces of reticulation, even under a powerful lens; the thorax is undivided, varied in shape and sometimes more or less tuberculate or sinuate laterally; the abdomen varies in form, especially that of the first segment. In the male the head is rarely quadrate, being generally transversely ovate; in a few species (those belonging to the subgenus *Mutilla*) the eyes are ovate and more or less acutely emarginate within; the divisions of the thorax are generally well defined, while the neuration of anterior wings varies considerably, especially the form of the marginal and submarginal cells. In the subgenus *Sphæropthalma* (those having small round, convex eyes) the majority of the species are densely clothed with long or short pubescence, more or less varied in color, the ornamentation of some being very brilliant and beautiful.

Of the habits of this genus very little seems to be known, although M. Drewsen of Copenhagen, gives an account (*Jour. Ent. Soc. Stettin*, 1847, p. 270) of having obtained as many as seventy-six (♂ ♀) specimens of *M. Europæa* from a single nest of a *Bombus*, and of finding the larvæ of the *Mutilla* in the cells closed as usual by the full fed grub of the bee; this certainly indicates that the genus is parasitic.

The species of the genus *Mutilla*, known to inhabit North America are very numerous as will be seen below, but upon a more extended knowledge of their economy, a number now considered distinct, will doubtless prove to be sexes of one and the same species. In the synoptical table given below, I have found it necessary, in consequence of the general great dissimilarity between the sexes, to separate the males from the females, being able thereby to characterize the species with more clearness than I could otherwise have done.

In the genus *Ayama* the ocelli are unusually prominent; the eyes very large, round, convex, smooth and polished; the body unicolorous —honey-yellow or castaneous—smooth and shining, with long rather sparse pubescence; the wings hyaline, rarely having dark spots or bands, and never uniformly fuliginous; and the abdomen generally more or less petiolated. The female appears to be unknown.

The exotic genus *Apteroggyna* is remarkable for the two anterior segments of abdomen being constricted and nodose, and for the great length of the male antennæ, which are nearly as long as the body.

In the genus *Myrmosa* the head is subglobose; the eyes small and round; the thorax of the female longitudinally quadrangular, with the anterior angles rounded, and the metathorax truncate; the thorax of the male ovate, the prothorax transverse and curving posteriorly toward the tegulæ but not reaching them; the anterior wings have one marginal and *four* submarginal cells, the second triangular, the third quadrate and the fourth extending to apex of the wing. The disparity between the sexes is said to be great. Only one species is known to inhabit North America, and while specimens of the male sex are by no means rare, the female appears to be unknown.

In the genus *Methoca* the ocelli are said to be distinct in both sexes; the head subglobose in the female, transverse in the male; eyes ovate; thorax elongate and doubly strangulated, or trinodose, in female, and oblong and continuous in male; the legs of the female long and slender, coxæ very robust, femora subclavate, tarsi longer than tibiæ; the abdomen ovato-conical in the female, attached to the thorax by a short petiole, linear in male, the segments subcrenate, the apex pro-

duced beneath into a long recurved spine. The four species said to inhabit North America are all unknown to me. Nothing definite appears to be known of their habits, although they are supposed to be parasitic. The sexes are said to be very dissimilar, so much so that the male was considered by Latreille as a distinct genus—*Tengyra*—which was arranged among the Scoliidæ.

Genus **MUTILLA**, Linn.

The species of this genus, so far known to me, may be tabulated as follows:

MALES.

Antennæ flabellate.....1. **Ajax.**
Antennæ simple.
Eyes ovate, more or less acutely emarginate within.
Abdomen more or less fulvous or ferruginous.
Head and thorax black, with pubescence entirely black.
Abdominal segments fringed at apex with black pubescence, first segment black..... 2. **Briaxus.**
Abdominal segments fringed at apex with golden pubescence; first segment black .....4. **Grotei.**
Head and thorax black, with black and white pubescence.
Abdominal segments fringed at apex with black pubescence.....3. **hexagona.**
Abdominal segments fringed at apex with golden pubescence.1. **Oajaca.**
Abdominal segments fringed at apex with silvery white pubescence.....11. **Copano.**
Head black; pro and mesothorax and abdomen ferruginous; segments fringed at apex with black pubescence.....7. **Sayi.**
Head and thorax above reddish brown, abdomen ferruginous, segments fringed at apex with black pubescence.....6. **Promethea.**
Head ochraceous, thorax black, mesothorax brown; abdomen ferruginous, segments fringed at apex with whitish pubescence.8. **senex.**
Abdomen black, banded with silvery pubescence.
Head with short gray pubescence; second segment of abdomen subopaque, with large coarse punctures; first and second segments with an apical band of silvery pubescence, remaining segments with mixed, black and silvery pubescence.....9. **scrupea.**
Head with long dense silvery pubescence; pleura and metathorax also silvery; second segment of abdomen shining, with less coarse punctures; first segment entirely and broad apical margin of second segment silvery, the whole abdomen with long silvery pubescence.....10. **gracilis.**
Eyes circular, convex, polished.
First abdominal segment small, nodiform, more or less constricted at apex.
Head and thorax black, with black pubescence.
First and second abdominal segments black, remainder with long dense fulvous pubescence.
Large; length 10 lines.....21. **Orcus.**

Small; length 4 lines.....23. **Zelaya.**

Second abdominal segment reddish-brown with a broad orange band on posterior half, slightly interrupted medially; first segment black with a reddish-brown band, remainder black....41. **Castor.**

Second segment (only) ferruginous, remainder black.

Head larger than usual, quadrate, vertex very broad behind the eyes; marginal cell lanceolate, pointed at apex.....18. **scæva.**

Head small and of the usual form.

Second abdominal segment bright orange-ferruginous *above and beneath*, with short coccineous pubescence, apical margin fringed with black pubescence; first segment flattened; marginal cell short, broadly truncate at tip.....43. **Bexar.**

Second abdominal segment ferruginous *above and beneath*, generally paler on posterior half, sometimes forming two large yellow spots, with golden pubescence, except at extreme base and apex where it is black; first segment nodose; marginal cell truncate at tip.....42. **fenestrata.**

Second abdominal segment *above* yellow, with long dense yellow pubescence, beneath black; remainder of abdomen above with long black pubescence; first segment nodose; marginal cell truncate at tip.....45. **macra.**

Second abdominal segment above ferruginous, with black pubescence, fuscous at base and apex and slightly so medially; beneath black; first segment nodose; marginal cell broadly rounded at apex.....47. **canella.**

Head and thorax black, sparsely mixed with glittering pubescence.

Second segment of abdomen ferruginous, with black pubescence, beneath with a broad longitudinal black band; wings fuscous, marginal cell broad and broadly rounded at apex..48. **macilenta.**

Abdomen, except first segment, ferruginous, with black pubescence, dense on apical margin of segments, apical segment with pale golden pubescence.....49. **obscura.**

Abdomen black, with pale glittering pubescence; a broad band, more or less distinctly defined, of pale glittering pubescence, behind second segment; wings subhyaline, marginal cell lanceolate, not abrupt at apex.....50. **gibbosa.**

Head entirely black, mesothorax and scutellum with fulvous pubescence; second abdominal segment with two large apical yellow spots.....37. **bioculata.**

Head and prothorax above, mesothorax and scutellum entirely, with ferruginous or fulvous pubescence.

First and second abdominal segments (except apex) black.

Large; apex of second and the following segments of abdomen with ferruginous pubescence.....24. **Comanche.**

Medium; apex of second and the following segments of abdomen with long, dense, bright fulvous pubescence.....29. **fulvohirta.**

Medium; apex of second and the following segments of abdomen with long, dense, bright scarlet pubescence.....32. **coccineohirta.**

Abdomen black, pex of second, the third and two apical segments with dense scarlet pubescence.....34. **occidentalis.**

Abdomen black, with only the second segment ferruginous, above and beneath, and with ferruginous pubescence except at apex .....38. **Asopus.**

Abdomen black, second segment yellow-ferruginous, with golden pubescence except at apex, remaining segments with mixed black and golden pubescence .....39. **Hector.**

Head and prothorax above, mesothorax and scutellum entirely, with dense yellowish-white pubescence; abdomen dull ferruginous, clothed with black pubescence; second segment yellowish; two apical segments with a patch of yellowish-white pubescence .....40. **monticola.**

Metathorax black; head and prothorax above, scutellum and more or less of metathorax, with fulvous-yellow or whitish pubescence.

Abdomen above black, second segment with a broad transverse median dull yellowish band, and the fourth, fifth and sixth segments with a dense dull yellowish pubescence; head and thorax above with yellowish-fulvous pubescence; wings fuliginous, with a broad median subhyaline band .....55. **Iztapa.**

Abdomen above, except extreme base to apex, with a dense bright scarlet pubescence; head and thorax above with clay colored pubescence .....33. **Sumichrasti.**

Abdomen with silvery pubescence: second segment ferruginous, generally with narrow black apical margin; three following segments with silvery pubescence, and the two apical segments black, with extreme apex silvery; head and thorax above with silvery pubescence .....46. **apicalata.**

Abdomen black, basal half of second and the third and fourth segments entirely with dense pale golden or yellowish-white pubescence: head, prothorax and scutellum with pale golden pubescence: wings dusky, with apical third fuliginous...52. **azteca.**

Abdomen black, apex of first, base of second, and the third and fourth segments with dense silvery-white pubescence; head, thorax, scutellum, pleura and base of metathorax with silvery-white pubescence; wings hyaline, the anterior pair bifasciate with fuscous .....51. **Wilsoni.**

Head and thorax ferruginous, the former larger than usual, quadrate, the vertex very broad behind eyes.

Abdomen, beyond second segment, black, with black pubescence; first and second segments ferruginous .....19. **pennsylvanica.**

Abdomen ferruginous, with golden pubescence; apex of first, second, and the following segments blackish .....20. **auripilis.**

First abdominal segment not nodiform, but gradually dilated towards apex and sessile with base of second segment.

Abdomen black, apex of all the segments with a fringe of long, dense, golden pubescence: vertex, pro- and mesothorax and scutellum with golden pubescence; tegument of prothorax ferruginous .....77. **propinqua.**

Abdomen black, second segment, except apical margin, yellowish-ferruginous, smooth and polished .....78. **Oceola.**

Abdomen ferruginous, second segment paler, all the segments with an apical fringe of black pubescence.....79. **Sanbornii.**

Abdomen brown, with short golden pubescence; first segment black, second, except narrow basal and apical margins, clay yellow; head and thorax with short silvery-gray pubescence; mesothorax black.....80. **flavida.**

Abdomen black, with mixed black and silvery pubescence.

Head very large, quadrate, much broader than thorax.....81. **laticeps.**

Head not broader than thorax.

Abdominal segments with an apical fringe of dense silvery pubescence.....82. **Xalapa.**

First and second abdominal segments black, the remainder with dense pale golden or yellowish-white pubescence ...83. **Zapoteca.**

Abdomen with long, thin, white pubescence; size minute...84. **Gila.**

FEMALES.

Eyes ovate.

First abdominal segment small, nodiform, more or less constricted at apex.

Head ochraceous; body ferruginous, abdomen above with two large black spots, apex ochraceous.....14. **cubensis.**

Head ferruginous, vertex golden, occiput black; abdomen without black spots, apex ochraceous.....15. **cinaloa.**

Head fuscous, vertex slightly golden; abdomen ferruginous, apex of second segment with cinereous band: body with erect black hairs: size minute.....16. **Yucatana.**

First abdominal segment gradually dilated to apex and sessile with base of second segment.

Head black; thorax ferruginous; abdomen black, ornamented with pale golden bands and stripes.....4. **Oajaca.**

Head ferruginous.

Size medium; legs black.....9. **ornativentris.**

Size small; legs ferruginous.....10. **Leona.**

Head ochraceous .....11. **palliceps.**

Eyes circular, convex, polished.

Body black.

First abdominal segment small, nodiform, more or less constricted at apex.

Head, thorax and abdomen black, ornamented with pale golden or silvery spots.

Large; head with a curved line on vertex and thorax and abdomen with spots and lines, all of pale golden pubescence; second abdominal segment with four polished dull yellowish spots, two anteriorly and two posteriorly .....53. **melanosoma.**

Small; head and mesothorax above and three spots on second abdominal segment, posterior pair large and a spot at tip of abdomen silvery white.....54. **trisignata.**

Head, thorax and abdomen, above with long, dense, white pubescence.....25. **Sackenii.**

Head and thorax entirely black,

Abdomen above more or less clothed with dense ferruginous pubescence, not spotted with black.

Abdomen above, expect first and base of second segments, ferruginous.

Head broad, quadrate..... ..... 22. **gorgon.**

Head of usual size and shape.....21. **orcus.**

Abdomen above, except first and base of second segment, ochraceous..... ..... 23. **Zelaya.**

Second segment of abdomen ferruginous; size small .... 44. **Waco.**

Head and thorax above blackish-brown; abdomen yellowish ferrngiuous, base and a band beyond second segment black.....24. **Comanche.**

Head entirely black; thorax and second abdominal segment above yellowish ferruginous, remainder black..... .....36. **medea.**

Head and thorax above with ochraceous or ferruginous pubescence.

Femora and base of tibiæ with ochraceous pubescence.....26. **magna.**

Legs entirely black.

Head broader than thorax, subquadrate.....27. **aureola.**

Head of usual size and shape.

Abdomen above, except base, ferruginous.....28. **californica.**

Abdomen above, except base, coccineous.....32. **coecineohirta.**

Second and base of third abdominal segments above, ferruginous..... .....35. **creusa.**

Abdomen (as well as head and thorax) above with short, dense, coccineous pubescence; first; base and apex of second and third segments entirely, black..... .....34. **occidentalis**

Body brown; head, thorax and second abdominal segment above with dense ferruginous pubescence

Legs black, with pubescence entirely black; abdomen behind second segment entirely black.....30. **bellona.**

Legs black, with mixed black and ochraceous pubescence; abdominal segments fringed at apex with ochraceous.....31. **Ægina.**

Body black, more or less clothed with a golden or ochraceous pubescence.

Abdomen ornamented with spots of various shapes and proportions.

Thorax above with a large discoidal black spot.

Abdomen with a large central black spot on second segment, connected with a small spot on each side; behind second segment two large quadrate black spots .....57. **Cressoni.**

Abdomen with a large trilobate black spot on second segment and a black spot at apex.....62. **arachnoides.**

Thorax above with a transverse, subovate, black mark, not reaching anterior margin.

Legs and abdomen black, second segment with two large silvery spots almost confluent on the disc .....63. **formosa.**

Legs and second abdominal segment ferruginous, the latter with a median black spot at base and a broad black apical band..... .....64. **Balopilas.**

Thorax with anterior portion more or less black.

Head entirely black; second abdominal segment with three black spots, central one large, subovate.....60 **Ariadne.**

Head golden or ochraceous.

Abdomen black; second segment with four dull yellowish spots; head and thorax above bright ferruginous.....56. **Proserpina.**

Abdomen golden or ochraceous, with black spots or bands.

Second abdominal segment with three confluent black spots near base, the central one largest.

Metathorax black; head golden; abdomen above golden, with a broad black band behind middle.....58. **Nortonii.**

Metathorax ochraceous, with a lateral black patch; head and abdomen above ochraceous, the latter with two large black spots behind middle.....59. **Toluca.**

Metathorax orange-yellow, with a central black spot; head and abdomen above orange-yellow, the latter with a broad black band behind middle; central black spot at base of second segment very large, lateral spots minute.....61. **Solola.**

Second abdominal segment with two large, elongate, somewhat oblique spots anteriorly, confluent at base; color of pubescence ochraceous and black; abdomen with a broad black band behind middle; head entirely ochraceous.....33. **Sumichrasti.**

Second abdominal segment with one large black spot at base.

Metathorax pale golden, with a central black spot..65. **Altamira.**

Metathorax entirely bright golden; basal black spot on second abdominal segment very large and broad, apical margin also black.....66. **Xalisco.**

Body black and ferruginous.

Head and thorax black, with erect black and depressed silvery pubescence; apex of metathorax ferruginous, a spot on disc of metathorax and sides of pleura silvery; abdomen pale ferruginous, the segments fringed with silvery white pubescence.....67. **Ulkei.**

Head entirely black; thorax rufo-ferruginous, with prominent lateral tubercles; second abdominalsegment black at base and rufo-ferruginous at apex, beyond which is a broad pale yellowish band; apex of abdomen black.....68. **nigriceps,**

Head black with erect hairs, vertex with depressed golden pubescence; thorax ferruginous, with long sparse erect, black hairs; abdomen black, second segment with three spots of silvery pubescence, the posterior pair large and transverse.....69. **floridana.**

Head ochraceous and black: thorax brown, elongate, with a tubercle on each side beyond middle; two ochraceous spots on thorax above; abdomen black spotted with ochraceous, second segment having two spots at base and a broad ochraceous band at apex, interrupted medially.....70. **tolteca.**

Head and thorax ferruginous; abdomen black, second segment with four rather small yellow spots, two at base and two near apex.....71.4—**guttata.**

Body ferruginous.

Second abdominal segment ferruginous or fusco-ferruginous, with four small yellow spots—two, distant; on basal margin and two, more approximate, near apical margin.....72. **Cypris.**

Second abdominal segment ferruginous, with four more or less distinct yellowish spots—two, small, on basal margin and two, large and almost confluent, near apical margin; size rather large.....74. **mutata.**

Second abdominal segment fuscous, with two large, rounded, nearly confluent, yellowish on pale ferruginous spots near apical margin: size small.....75. **scævola.**

Second abdominal segment ferruginous, with a more or less distinct patch of black pubescence on basal middle, from which, sometimes, proceeds an oblique black line; apical margin more or less black.....73. **ferrugata.**

Second abdominal segment ferruginous, apical margin blackish, with an uninterrupted fringe of dense white pubescence: first segment fringed at apex with black, with a dot of white pubescence on middle of apical margin.....76. **balteola.**

Frst abdominal segment gradually dilated at apex and sessile with base of second segment.

Posterior angles of head acutely produced.

Head very large, nearly twice broader than thorax, with two large spines beneath behind mandibles.....85. **Robinsonii.**

Head large, a little wider than thorax, cheeks with an acute spine beneath.....86. **capitata.**

Posterior angles of head carinate, ending beneath in a short spine.

Head ferruginous, with golden pubescence on vertex; second abdominal segment with two pale yellowish spots.....87. **Lerma.**

Head entirely ferruginous, shining; second abdominal segment with two large ferruginous spots, occupying nearly the whole segment above.....88. **canadensis.**

Posterior angles of head carinate, unarmed beneath.

Second abdominal segment above yellowish, a large spot on basal middle, a dot on each side and broad apical margin, narrowed laterally black; head and thorax black, with golden pubescence.....89. **bisignata.**

Second abdominal segment above ferruginous, with a large black spot at base and another at apex; head with dense golden pubescence.....90. **connectens.**

Second abdominal segment above ferruginous, with three spots at base (middle one largest,) and broad apical margin fuscous; head with dense ochraceous pubescence.....91. **contumax.**

Second abdominal segment above golden yellow, with three black spots, middle one large and longitudinal; head ferruginous, occiput black.....92. **gothica.**

Second abdominal segment above silvery, with three black spots towards base, middle one large and longitudinal: head ferruginous, occiput with two black spots.....93. **Izucar.**

Second abdominal segment above golden-yellow, with three black spots at base, and large transverse one at apex; head very large, quadrate, ferruginous.....94. **Chiapa.**

Second abdominal segment above black, with a pale golden cross (extending the entire length and width of the segment...95. **cruciata.**

Second abdominal segment above fuscous, with a pale golden cross (the longitudinal bar not well defined medially); head entirely ferruginous.....96. **petricola.**

Second abdominal segment above blackish, with a transverse pale golden band, interrupted medially; head ferruginous, vertex with pale golden pubescence.....97. **auripes.**

Second abdominal segment above blackish, with a transverse, sinuate, pale golden band; head fuscous, vertex with a pale golden pubescence; size minute.....98. **minutissima.**

Second abdominal segment above black, with two round, *distant*, yellowish spots near apical margin, which is narrowly pale golden, and two approximate ferruginous dots on basal margin; head black, face and cheeks ferruginous.....99. **psammadroma.**

Second abdominal segment above ferruginous, with apical margin more or less broadly black; head entirely ferruginous, carinæ on posterior angles not prominent.....100. **similima.**

Posterior angles rounded, not carinate.

Head and thorax black, reddish-brown above; second abdominal segment bright ferruginous, apical segments fringed with silvery pubescence.....101. **brazoria.**

Head, thorax and second abdominal segment above entirely ferruginous.....102. **montivaga.**

The genus may be divided into the following subgenera:

Antennæ of male flabellate.....PSAMMOTHERMA.

Antennæ simple in both sexes.

Eyes ovate, emarginate in male.....MUTILLA.

Eyes small, round, convex.....SPHEROPTHALMA.

Subgenus **PSAMMOTHERMA.**

This is distinguished from all the other subgenera of *Mutilla* by the ♂ antennæ being flabellate. The neuration of the anterior wing is much like that of the first division of the next subgenus, (fig. 1), except that the third submarginal cell is not hexagonal, but rather subtriangular, shaped considerably like that of *occidentalis* (fig. 3).

This is only the second species of this subgenus so far known, the first being from Senegal—the *P. flabellata*, Latr., which differs by the second abdominal segment being ferruginous.

1. **Mutilla (Psammotherma) Ajax**, n. sp.

Male.—Black, head round, densely punctured, mouth clothed with pale golden hairs, mandibles black; antennæ: scape finely punctured, clothed with pale glittering hairs; flagellum consisting of eleven joints, ten of which are strongly bipectinate; eyes ovate. Thorax elongate quadrate, rounded in front, pro- and anterior half of the mesothoracic disc rufo-ferruginous, coarsely punctured, the latter having two longitudinal, deeply impressed lines, scutellum black, rounded, closely punctured, post-scutellar groove distinct, metathorax roundly truncate, coarsely and deeply reticulate. Tegulæ rufo-ferruginous, produced posteriorly, finely punctured. Wings ample, fuliginous, paler towards the

base of the externo median cell; marginal cell ovate, rounded at, and narrowed to tip, first submarginal large, second elongate subquadrate, acutely pointed towards the base, its apical nervure sinuate, and receiving the first recurrent at middle, third subhexagonal, receiving the second recurrent a little before the apical nervure, which is sinuate, its external angles with abbreviated nervures. Legs black, clothed with glittering hairs, calcaria pale. Abdomen ovate, basal segment campanulate, closely punctured, its apical margin clothed with pale yellowish pubescence, second segment shining, moderately closely punctured, interspersed with a few erect hairs, the apical margin adorned with a band of pale golden pubescence; apical segments black (?) Length 5½ lines, expanse of wings 10½ lines.

Hab.—Florida. Harris Collection. This species agrees with Fabricius' description of *M.* (*Psammotherma*) *flabellata*, while St. Fargeau describes the second abdominal segment as rufous. They can scarcely be identical, the latter species being from Senegal.

Subgenus **MUTILLA**.

This subgenus is readily distinguished by the ovate eyes, more or less acutely emarginate within in the males, but entire in the females. The species, which are not numerous, may be divided into three divisions, viz:—

Division I.—Neuration of anterior wing as represented by figure 1, the first

Fig. 1.

Fig. 2.

Fig. 3.

abdominal segment small, but gradually dilated to apex, where it is sessile with the base of the second segment, as in figures 4 and 5.

Division II.—Neuration of anterior wing as represented by figure 2; the first

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

abdominal segment small, subnodiform, or subquadrate, as in figures 8 and 9.

Division III.—Neuration as represented by figure 2, except that the third submarginal cell is obsolete; first abdominal segment as in figure 7.

DIVISION I.

2. **Mutilla Briaxus.** n. sp.

Male.—Black, head rounded, finely punctured, thinly clothed with erect hairs, eyes large, ovate emarginate. Thorax elongate, subquadrate, anterior angles subacute, closely punctured, disc of mesothorax with four longitudinal lines, the two central ones impressed, scutellum rounded, metathorax coarsely reticulate, dorsal groove extending to the middle. Tegulæ finely punctured. Wings ample, fuliginous, with a violet iridescence, marginal cell elongate ovate, truncate at extreme tip, second submarginal gradually narrowed to

base, receiving the first recurrent about the middle, third hexagonal, receiving the second reeurrent beyond the middle. Legs black, finely punctured, thinly clothed with black hairs, calcaria white. Abdomen ovate, basal segment campanulate, black, closely punctured, second and following segments shining, ferruginous, finely punctured, apical margins fuscous, fringed with black pubescence. Underside as above. Length 6 lines, expanse of wing 11 lines.

Hab.—Pennsylvania, Delaware.

This may be *M. vigilans*, Say: the neurtion being the same as in that species. The second abdominal segment is entirely bright ferruginous, while *vigilans* has the basal and apical margins black.

3. **Mutilla hexagona**, Say, Bost. Jour. I, p. 295, 2.

Male.—Head and thorax black, abdomen dark honey-yellow, basal segment black, scape of antennæ tufted; wings fuliginous; third submarginal cell hexagonal, eyes ovate, emarginate. Length 6—7 lines, expanse of wings 11 lines.

Hab.—Western and Southern States.

4. **Mutilla Grotei**, n. sp.

Male.—Head and thorax black, head not as wide as the thorax, rounded, closely punctured, clothed with short black hairs; antennæ blackish, scape rufous, clothed with glittering pubescence; eyes ovate, emarginate. Thorax robust, subquadrate, rounded behind, thinly clothed with short black hairs, pro- and mesothorax closely punctured, the latter elevated, metathorax coarsely reticulate, abruptly rounded. Wings ample, pale fuliginous, marginal cell large, sublanceolate, gradually rounded to tip, three distinct submarginal cells, the first nearly as long as the marginal, second not quite as long as the first, receiving the first recurrent nervure in the middle. Legs black, clothed with fulvous hairs, calcaria whitish. Abdomen elongate ovate, basal segment black closely punctured, thinly clothed with brownish hairs, second segment fulvous, finely punctured, having on the disc a longitudinal black patch, extending nearly to the apical margin, the remaining segments cloth with dense golden fulvous pubescence; under side clothed with short fulvous hairs. Length 7 lines, expanse of wings 12 lines.

Hab.—Colorado. This species is dedicated to my friend Aug. R. Grote, to whom I am indebted for much reliable entomological information.

5. **Mutilla oajaca**, n. sp.

Male.—Head and thorax black, closely and deeply punctured, clothed with scattered pale yellowish pubescence; eyes large, ovate, emarginate; antennæ black; metathorax rounded, posteriorly abrupt, with a scattered black pubescence. Wings blackish, paler towards the base, marginal cell moderately long, rounded at tip, extending beyond the third submarginal, three submarginal cells, the first about as long as the marginal, the second shorter and narrowed towards the first, receiving the first reeurrent nervure about the middle, the third submarginal clearly defined, subpentagonal. Legs black, clothed with long pale yellowish pubescence. Abdomen elongate ovate, ferruginous above and beneath, finely punctured, apical margins of all the seg-

ments fringed with bright fulvous pubescence; basal segment black. Length 7 lines, expanse of wings 10 lines.

Female.—Head deep black, densely punctured, wider than the thorax, with scattered, erect black hairs; eyes large, ovate, entire; antennæ black. Thorax

ferruginous, elongate quadrate, sides slightly concave; metathorax abruptly truncate behind. Legs shining black, clothed with glittering hairs. Abdomen ovate, black, apical margin of basal segment fringed with pale golden pubescence, on the dorsal surface of second segment there are two elongate quadrate patches of dense pale golden pubescence, extending half way to the apical margin, which is ornamented with a broad band of pale golden pubescence having the interior margin sinuate; the remaining segments have a patch of pale pubescence on each side, together forming a V shaped line to the apex; beneath, the margins of the segments are fringed with pale glittering hairs. Length 6 lines.

Hab.—Mexico. Prof. F. Sumichrast. In some individuals the head is ferruginous.

6. **Mutilla Promethea**, n. sp.

Male.—Rufo-ferruginous, head round, closely punctured, face below the line of the eyes black, clothed with obscure yellowish hairs, eyes large, ovate, emarginate, mandibles black, with a rufous dash before the tips, which are bidentate. Thorax elongate-subquadrate, rounded in front, thinly clothed with obscure rufous pubescence, closely punctured, the mesothorax with two deeply impressed longitudinal lines, metathorax rounded, coarsely reticulate. Tegulæ finely punctured, fuscous. Wings ample, fuliginous, marginal cell elongate-ovate, truncate at tip, second submarginal subquadrate, pointed towards base, receiving the first recurrent nervure at middle, third hexagonal, receiving the second recurrent beyond the middle. Legs black, thinly clothed with pale hairs. Abdomen ovate, basal segment campanulate, black, finely punctured, second and following segments rufo-ferruginous, finely punctured, the apical margins fuscous, fringed with blackish pubescence, underside same as above. Length 6½ lines, expanse of wings 12 lines.

Hab.—Louisiana.

7. **Mutilla Sayi**, n. sp.

Male.—Head transverse, rounded, black, moderately punctured, face thinly clothed with whitish pubescence; antennæ piceous, scape clothed with glittering pubescence; eyes large, ovate emarginate; mandibles dark rufous before the tip. Thorax robust, ovate, narrowed posteriorly, pro- and mesothorax rufous, closely punctured, the latter bearing three discal, longitudinal, slightly impressed lines; scutellum finely punctured; metathorax roundly truncate, coarsely reticulate, dorsal groove not extending to the middle; sides closely punctured. Tegulæ ovate, minutely punctured. Wings fuliginous, marginal cell elongate ovate, obliquely truncate at tip, first submarginal long, narrowed to base, second similar in form and pointed towards base, its apical nervure arcuate, third irregularly hexagonal, its outer angles with abbreviated nervures. Legs black, thinly clothed with glittering hairs, calcaria white. Abdomen ovate, narrowed to apex, basal segment black, closely punctured, subsessile with the second, which is bright ferruginous, finely punctured, the punctures becoming finer and denser at sides, apical margin blackish, fringed with black pubescence; segments dark ferruginous, finely punctured, fringed with

brownish black pubescence, ventral surface same as above. Length 5½ lines, expanse of wings 9 lines.

Hab.—Texas. Belfrage.

8. **Mutilla senex**, Guér. Icon. Règ. Anim. III. p. 429, pl. 69, fig. 4. La Sagra's Hist. Cuba, Ins. p. 758.

Male.—Head clothed with pale ochraceous pubescence, abdomen ferruginous, segment fringed with whitish pubescence, wings fusco-hyaline, eyes ovate, emarginate. Length 5½ lines, expanse of wings 10½ lines.

Hab.—Cuba.

9. **Mutilla ornativentris**, Cresson, Proc. Ent. Soc. Phil. Vol. IV. p. 438.

Female.—Ferruginous, head wider than the thorax, abdominal segments with silvery pubescence, eyes ovate. Length 4½—5 lines.

Hab.—Western and Southern States.

This is probably the female of *hexagona*, Say.

10. **Mutilla Leona**, n. sp.

Female.—Head round, as wide as the thorax, ferruginous, closely covered with elongate punctures, mandibles ferruginous, the tips black; eyes large, ovate, entire. Thorax quadrate, ferruginous, closely punctured, lateral declivities smooth, metathorax coarsely reticulate, abruptly truncate. Legs rufo-testaceous, thinly clothed with pale hairs, ealearia pale. Abdomen ovate, black, clothed with appressed black pubescence, basal segment testaceous. its apical margin fringed with pale golden pubescence; second segment having two short longitudinal stripes of pale golden pubescence, placed laterally near the base, apical margin and remaining segments, except the middle of the third and fourth, clothed with pale golden pubescence. Length 2½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

11. **Mutilla palliceps**, Cresson, Proc. Ent. Soc. Phil. Vol. IV. p. 112.

Female.—Rufo-ferruginous, head clothed with dense, pale ochraceous pubescence, eyes ovate. Length 2—4½ lines.

Hab.—Cuba.

This species varies by having the thorax and legs sometimes entirely black, sometimes entirely ferruginous.

This is probably the female of *senex*, Guér.

DIVSION II.

12. **Mutilla scrupea**, Say, Bost. Jour. I. p. 297, 5.

Male.—Black, head and thorax covered with coarse confluent punctures, thinly clothed with scattered pale yellowish hairs; antennæ and mandibles black; eyes ovate, emarginate. Thorax: anterior angles of prothorax subacute sutures of the meso- and metathorax deeply impressed, the latter very coarsely reticulate. Wings subhyaline, apical margins slightly clouded, marginal cell sublanceolate, first submarginal small, second large, receiving the first recurrent nervure near the apex, third irregularly pentagonal, its exterior angles with short nervures, second discoidal cell large. Legs black, thinly clothed with glittering hairs. Abdomen ovate, basal segment short, armed on each side at its base with a stout tooth, the underside having a longitudinal carina, terminating anteriorly in a tubercle; second segment covered with large, deep punctures, apical margin fringed with silvery pubescence; the remaining seg-

ments having a few scattered, short silvery hairs: underside same as above: lateral sutures distinct. Length 4½ lines, expanse of wings 7½ lines.

Hab.—Eastern States. Coll. of Mr. Edward Norton.

13. **Mutilla gracilis**, Smith, Cat. Brit. Mus. Hym. III. p. 42—No. 209.

Male.—Black: head clothed with silvery pubescence, wings hyaline, apical margin clouded, marginal cell elongate ovate, first, and apical margin of second abdominal segment clothed with silvery pubescence, eyes emarginate. Length 3¾ lines, expanse of wings 6 lines.

Hab.—Texas, Mexico, Brazil.

14. **Mutilla cubensis**, n. sp.

Female.—Rufo-testaceous; head rounded, clothed with dense pale golden pubescence; scape of antennæ rufous, flagelium piceous: eyes ovate, prominent. Thorax elongate ovate, narrowed posteriorly, coarsely punctured, meso- and metathorax armed at the sides with a tooth, those on the latter acute, metathorax roundly truncate. Legs rufo-testaceous, the intermediate and posterior tibiæ armed with a row of spines, tarsi clothed with pale golden pubescence, Abdomen ovate, basal segment cylindrical, clothed with dense, pale pubescence, second segment densely punctured, with a cordate black patch at the base, third segment clothed with dense pale golden pubescence, with an ovate black patch on the middle, the remaining segments clothed with dense pale pubescence; ventral segments fringed with pale hairs. Under surface of entire insect paler than above. Length 4 lines.

Hab.—Cuba.

15. **Mutilla Cinaloa**, n. sp.

Female.—Dark ferruginous, head rounded, wider than the thorax, face and vertex clothed with deep golden pubescence, posterior margin black: antennæ: scape and first joint of flagellum ferruginous, the latter fuscous. Eyes ovate, large. Thorax elongate-ovate, narrowed posteriorly, closely reticulate, margins of the disc black, metathorax gradually rounded, armed on each side in front, with an acute tooth. Legs ferruginous, clothed with a few glittering hairs. Abdomen ovate, second segment closely punctured, sides of apical margin with dark stains, the remaining segments clothed with deep golden pubescence, having a denuded central line; underside paler than above, lateral carinæ distinct. Length 3—4 lines.

Hab.—Mexico. Prof. F. Sumichrast.

16. **Mutilla Yucatana**, n. sp,

Female.—Head round, wider than the thorax, fuscous, finely reticulate, thinly clothed with erect black hairs: antennæ: scape and first joint of flagellum rufous; eyes ovate, granulate. Thorax elongate ovate, ferruginous, finely reticulated, thinly clothed with erect hairs, metathorax gradually rounded behind. Legs pale rufous, clothed with pale glittering hairs. Abdomen ovate, dark ferruginous on the disc, sides fuscous, apical margin of second segment clothed with pale pubescence, the remaining segments with a central row of spots to the apex. Length 1½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

DIVISION III.

17. **Mutilla Copano**, n. sp.

Male.—Head and thorax black, coarsely reticulate, head subquadrate, not quite as wide as the thorax, thinly clothed with short silvery hairs; antennæ black, scape punctured, mandibles ferruginous before the tips; eyes vate, emarginate. Thorax robust, narrowed behind, anterior angles of prothorax produced into acute teeth, posterior margin carinate, sides of mesothorax dilated, clothed with silvery pubescence, metathorax roundly truncate. Wings pale fuliginous, hyaline at base; marginal cell sub-lanceolate, obliquely truncate at tip, first and second submarginal cells about equal, the second subtriangular, receiving the recurrent nervure beyond the middle, third obsolete; second discoidal cell large; tegulæ large, ovate, closely punctured, posteriorly ferruginous. Legs black, thinly clothed with white hairs, calcaria white. Abdomen ovate, ferruginous, basal segment small, punctured, with a ventral carina terminating in an acute tooth anteriorly; second segment finely and closely punctured, apical margin clothed with silvery pubescence; the remaining segments fringed with a thin golden pubescence, ventral surface same as above, lateral carinæ distinct. Length 4 lines, expanse of wings 5 lines.

Hab.—Texas. Belfrage.

Subgenus **SPHÆROPTHALMA.**

This subgenus is distinguished by the circular, convex, polished eyes. The species are quite numerous, and may be divided into two divisions, viz:

Division I.—First abdominal segment small, more or less nodose and constricted at apex, as in figures 6 and 7.

Division II.—First abdominal segment gradually dilated to apex, where it is sessile with the base of second segment, as in figures 8 and 9.

DIVISION I.

This may be again divided into two subdivisions, viz:

Subdivision I.—Head broad and quadrate behind the eyes, which are very prominent, though small, and placed close to base of mandibles, these latter are broad and protruding, making the face deeply concave; neuration of anterior wing as represented by figure 10.

FIG. 10.

Subdivision II.—Head subtransverse or subquadrate, not remarkably enlarged behind the eyes; neuration, generally, as represented by figure 3.

Subdivision I.

18. **Mutilla scaeva**, n. sp.

Male.—Black, head rounded, as wide as the thorax, closely punctured, space above and between the eyes ruf-ferruginous, with short erect hairs; antennæ black, the scape finely punctured; eyes round, prominent. Thorax sub-quadrate, narrowed posteriorly, mesothorax elevated, metathorax abruptly rounded, coarsely reticulated. Wings ample, fuliginous, marginal cell elongate-ovate, slightly rounded at tip; two distinct submarginal cells, first moderately long and narrow, second about half as large as the marginal, receiving the first recurrent nervure a little before the middle. Legs black, clothed with scattered black hairs, posterior tibiæ armed with a single spur. Abdomen ovate, basal

segment elongate, closely punctured, thinly clothed with black hairs; second segment pale ferruginous, with scattered hairs of the same color, shining, finely punctured, lateral carinæ edged internally with black; the remaining segments clothed with dense, coarse black pubescence. Length 5½ lines, expanse of wings 10 lines.

Hab.—Texas.

In some specimens the disc of the petiole is dark rufous.

19. **Mutilla pennsylvanica.** St. Farg. Hym. III, p. 628, 49.

Male.—Head and thorax reddish, first and second abdominal segments reddish, apical margin of the former black; wings fuliginous, marginal cell elongate-ovate, eyes round. Length 6—7 lines, expanse of wings 11 lines.

Hab.—Middle States.

20. **Mutilla auripilis,** n. sp.

Male.—Dark ferruginous, head quadrate, posterior angles rounded, closely and finely punctured, thinly clothed with scattered black hairs scape of antennæ dark rufous, flagellum rufo-piceous; mandibles ferruginous, tipped with black; eyes prominent, round, polished. Thorax elongate, narrowed behind, closely reticulated, very thinly clothed with dark hairs, posterior margin of prothorax carinate; mesothorax elevated, having four shallow, longitudinal grooves on the disc; metathorax gradually rounded, having a distinct suture in front. Wings moderate, fuliginous, marginal cell lanceolate, first submarginal small, narrow, second large, subquadrate, receiving the first recurrent nervure before the middle, third obsolete, not extending as far as the marginal: a hyaline streak passing from the costa through the first and second submarginal cells, terminating in a patch of the same, below the third. Legs black, clothed with pale glittering hairs. Abdomen elongate-ovate, basal segment dark ferruginous, with the apical margin black, closely reticulated, clothed with scattered pale hairs; second segment dusky fulvous, finely punctured, clothed with erect fulvous hairs; apical margin blackish; the remaining segments blackish, very finely reticulated, clothed with golden fulvous pubescence; lateral carinæ distinct. Length 6½ lines, expanse of wings 12 lines.

Hab.—Texas.

21. **Mutilla Orcus,** Cresson, Proc. Ent. Soc. Phila. Vol. IV, p. 428.

Female.—Deep black, with coarse black and fulvous pubescence, head not wider than the thorax, eyes round. Length 9—9½ lines.

Male.—Similar to the female. Wings blackish, marginal cell short. Length 10 lines, expanse of wings 16½ lines.

Hab.—Texas.

22. **Mutilla Gorgon,** n. sp.

Female.—Black, head wider than the thorax, subquadrate, posterior angles rounded, thinly clothed with black pubescence, closely punctured, cheeks prominent; eyes round, polished, scape of antennæ punctured; clothed with coarse black pubescence, mandibles, with a tooth before the tip. Thorax short, ovate, closely covered with confluent punctures, clothed with black pubescence, metathorax abruptly truncate. Legs black, clothed with black hairs, finely punctured, the intermediate and posterior tibiæ armed with spines. Abdomen ovate, basal segment closely punctured, dorsal surface, except anterior margin of second segment, clothed with dense, coarse, dark ferrugin-

ous pubescence; under surface coarsely punctured, ventral segments fringed with black pubescence Length 8 lines.

Hab.—Texas. Belfrage.

This species resembles *M. orcus*, Cresson, but may be readily distinguished by the large subquadrate head, the shorter thorax, and mandibles being toothed before the tip.

23. **Mutilla Zelaya**, n. sp.

Male.—Black, head rounded, as wide as the thorax, finely punctured, thinly clothed with erect black pubescence, eyes round, polished, antennæ black. Thorax ovate, closely punctured, clothed with erect black hairs, metathorax roundly truncate, closely reticulate. Tegulæ small, polished. Wings fuscous, marginal cell obliquely subquadrate, truncate at tip, first submarginal large, second subtriangular, wide beneath, its basal and apical nervures sinuate, receiving the first recurrent near the base, third subpentagonal, narrowed beneath. Legs black, thinly clothed with black hairs. Abdomen elongate ovate, petiolate, petiole pyriform, closely punctured, having a small ventral tubercle, second segment shining, closely punctured, thinly clothed with erect black hairs, the apical margin and following segments clothed with long coarse orange-yellow pubescence; underside shining black. Length 4 lines, expanse of wings 7 lines.

Hab.—Texas.

24. **Mutilla Comanche**, n. sp.

Male.—Black, head not as wide as the thorax, rounded, clothed with long, coarse, dark ferruginous pubescence, scape of antennæ black, flagellum fuliginous, mandibles black; eyes round, prominent. Thorax elongate quadrate, pro- and mesothorax thinly clothed with black hairs. Wings ample, fuliginous, marginal cell short, abruptly truncate at tip; three distinct submarginal cells, the first a little longer than the marginal, the second sub-triangular, having a subhyaline streak through its entire length, and receiving the first recurrent nervure one third before the middle; the third extending beyond the marginal; tegulæ large. Legs black, clothed with black hairs; calcaria black, long, serrated interiorly. Abdomen ovate, basal segment closely punctured, clothed with coarse black hairs: second segment finely punctured, shining, thinly clothed with black hairs; apical margin, and following segments, thickly clothed with long, dark ferruginous pubescence: margins of the second and third ventral segments fringed as above, lateral carinæ distinct. Length 9 lines, expanse of wings 18 lines.

Female.—Black, head subquadrate, posterior angles rounded, not as wide as the thorax, reticulated, clothed with brown-black pubescence; scape of antennæ black, rugulose, flagellum dark fuscous; eyes round, prominent; cheeks below the eyes closely punctured. Thorax short, narrowed behind, coarsely reticulated, clothed the same as the head, the mesothorax has on each side a strong carina, which terminates at the top in a small obtuse tooth; metathorax abruptly truncate, the sides closely reticulated, and bearing a shining black tubercle on each side. Legs robust, black, clothed with long black hairs. Abdomen ovate, basal segment coarsely reticulated, clothed with long scattered black hairs; second segment closely punctured, basal and apical margins clothed with black, disc with pale brown pubescence; third segment clothed with brownish black, the remaining segments with ferruginous; under side of

second segment closely punctured, lateral carinæ distinct; margins of ventral segments fringed with dark brown pubescence. Length 10 lines.

Hab.—Texas.

25. **Mutilla Sackenii**, Cresson, Proc. Ent. Soc. Phila. Vol. IV. p. 385. 1865.

(*M. gloriosa*, Sauss. Ann. Soc. Ent. France 4 series, Vol. VII, p. 359, pl. 8. fig. 9. 1867.

Female.—Deep black, head, thorax and abdomen, clothed with very long dense, whitish pubescence, eyes round. Length 5½—6½ lines.

Hab.—California.

26. **Mutilla magna**, Cresson, Proc. Ent. Soc. Phil. 1865, Vol. 4, p. 385.

Female.—Large, black, clothed above with coarse ochraceous yellow pubescence, head rounded, not as wide as the thorax, eyes round. Length 10—11 lines.

Hab.—Colorado.

Allied to *Orcus* and *Comanche*.

27. **Mutilla aureola**, Cresson, Proc. Ent. Soc. Phil. Vol. IV. p. 385.

Female.—Black; head, thorax and abdomen clothed with ochraceous pubescence, head wider than the thorax, eyes round. Length 6½ lines.

Hab.—California.

28. **Mutilla californica**, Radochk, Xoræ. Soc. Ent. Ross. 1861, p. 86, pl. 2, fig. 7. Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 432.

Female.—Black; head, thorax and abdomen above clothed with ferruginous pubescence, eyes round. Length 4½—7 lines.

Hab.—California; Colorado.

29. **Mutilla fulvohirta**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 433.

Male.—Black; head, thorax and apical half of abdomen, clothed with bright fulvous pubescence, wings blackish, eyes round. Length 5—6 lines, expanse of wings 9—11 lines,

Hab.—Colorado.

30. **Mutilla Bellona**, Cresson, Proc. Ent. Soc, Phila. Vol. IV, p. 434.

Female.—Rufo-piceous; head, thorax and second abdominal segment, with rufo-ferruginous pubescence, base and apex black, eyes round. Length 6—7 lines.

Hab.—Colorado.

31. **Mutilla Ægina**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 435.

Female.—Rufo piceous; head, thorax and second abdominal segment, except base, with reddish pubescence, remainder with black pubescence, eyes round. Length 6 lines.

Hab.—Colorado.

32. **Mutilla coccineohirta**, n. sp.

Male.—Black; head round, not as wide as the thorax, coarsely reticulated, clothed with long coarse scarlet pubescence; antennæ black; eyes round. Thorax short, arrowed behind, pro- and mesothorax clothed similar to the head, metathorax abruptly rounded, coarsely punctured. Wings dark fuscous, marginal

cell small, abruptly truncate at tip; first submarginal larger than the marginal, second sub-triangular, receiving the first recurrent nervure, near the first submarginal, third distinct, and extending beyond the marginal. Legs black, with black hairs. Abdomen ovate, basal segment clothed with erect black hairs, apical half of second, and the following segments clothed with long, coarse, scarlet pubescence, underside, black, shining. Length 5 lines, expanse of wings 9½ lines.

Female.—Same as the male, with the exception of the second segment of the abdomen being entirely covered with coarse scarlet pubescence Length 4—6 lines.

Hab.—California. Mr. Lülich.

Closely allied to *fulvohirta*, Cress., but may be distinguished by the marginal cell being smaller, and the clothing much coarser.

33. **Mutilla Sumichrasti**, Sauss. Ann. Ent. Soc. Fr., 4th Series, Tom. VII. p. 357, pl. 8. figs. 7—8, ♂ ♀.

Male.—Head and thorax black, clothed with ochraceous pubescence, mesothorax black; wings hyaline, clouded at apex, marginal cell short, truncate at tip. Abdomen above clothed with scarlet pubescence, apex black. Eyes round. Length 6 lines; expanse of wings 8 lines.

Female.—Head subquadrate, posterior angles rounded, clothed with dense ochraceous pubescence; eyes round, convex, polished; antennæ black. Thorax short, subquadrate, somewhat wider than the head, narrowed posteriorly, disc clothed with black pubescence, margined laterally and posteriorly with ochraceous. Legs black, clothed with yellowish hairs. Abdomen ovate, second segment clothed with dense ochraceous pubescence, having on the disc a bilobate patch of black, somewhat resembling a horseshoe in form, extending to the anterior margin, third and fourth segments with black pubescence, the remaining ones ochraceous, apex black. Length 4—6 lines.

Hab.—Mexico.

34. **Mutilla occidentalis**, Linn. Syst. Nat. I, 966. St. Farg. Hym. III, 595. 1. t. 36. *M. coccinea*, Fabr. Ent. Syst. II, 966. 1 Beauv. Ins. p. 259. t. 10, fig. 1 ♂, 2 ♀.

Hab.—North America. A very common species.

35. **Mutilla Creusa**, Cresson, Proc. Ent. Soc. Phil. Vol. IV. p. 431.

Female.—Black; head, thorax and second abdominal segment above, clothed with pale ferruginous pubescence; eyes round. Length 7½ lines.

Hab.—Colorado.

36. **Mutilla medea**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 432.

Female.—Black; thorax and second abdominal segment, pale ferruginous; eyes round. Length 6—7 lines.

Hab.—Colorado.

37. **Mutilla bioculata**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 431.

Male.—Large, black, pubescence black. Thorax and second abdominal segment with fulvous pubescence, wings blackish, eyes round. Length 5—8 lines, expanse of wings 9—13½ lines.

Hab.—Colorado.

38. **Mutilla Asopus,** Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 435.

Male.—Black; head and thorax above and second abdominal segment red, wings blackish, eyes round. Length 5¼ lines, expanse of wings 9½ lines.

Hab.—Colorado.

39. **Mutilla Hector,** n. sp.

Male.—Head black, round, coarsely punctured, clothed with coarse ferruginous pubescence; eyes small, round, prominent; antennæ black, scape closely punctured. Thorax ovate, posteriorly narrowed, pro- and mesothorax clothed above with dense coarse ferruginous pubescence, metathorax roundly truncate, coarsely reticulate, dorsal groove not extending to the middle, sides closely punctured. Wings fuliginous, marginal cell subovate, truncate at tip, first submarginal nearly as large as the marginal, second wide beneath, receiving the recurrent nervure before the middle, its apical nervure arcuate. Legs black, with scattered black hairs. Abdomen ovate, basal segment campanulate, black, closely punctured, second segment fulvo-ferruginous, finely punctured, bearing a scattered ferruginous pubescence, its basal and apical margins black, remaining segments black, clothed with dark ferruginous pubescence; ventral surface of second segment with a longitudinal carina. Length 5½ lines, expanse of wings 9 lines.

Hab.—Kansas. Collection of Mr. Norton.

This may prove to be the male of *M. Ægina*, Cresson.

40. **Mutilla monticola**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 430.

Male.—Black, head and thorax with yellowish white pubescence, wings blackish, paler about the middle, abdomen ferruginous, segments fringed with blackish pubescence, eyes round. Length 4—5 lines, expanse of wings 6½—8 lines.

Hab.—Colorado.

41. **Mutilla castor,** n. sp.

Male.—Black; head rounded, closely punctured, clothed with erect black hairs; eyes round, prominent. Thorax elongate subquadrate, anterior angles rounded, densely punctured, thinly clothed with long black pubescence, metathorax roundly truncate, closely reticulate. Tegulæ round, polished. Wings ample, blackish, marginal cell elongate subquadrate, truncate at tip, second submarginal subtriangular, wide beneath, receiving the first recurrent a little before the middle, third sub-pentagonal, so much narrowed at base that its extreme nervure is opposite to and joins the second recurrent. Legs black, thinly clothed with black hairs. Abdomen ovate, petiolate, petiole closely punctured, having a longitudinal carina on each side, clothed with erect blackish hairs, disc dark ferruginous, base and apical margin black, second segment having the basal half castaneous, apical half bright ferruginous, apical margin and following segments black, clothed with dense black pubescence; underside of second segment castaneous, the abdominal fovea large and deep. Length 5½—8½ lines, expanse of wings 9—13 lines.

Hab.—Kansas; Texas.

In some individuals the petiole and basal half of second abdominal segment is entirely black. The neuration of the wings in this species is similar to that of *M. contracta*, described by Say.

42. **Mutilla fenestrata**, St. Farg. Hym. III, p. 627. 48.

Male.—Black; head and thorax with black pubescence, wings blackish, marginal cell truncate at tip, abdomen petiolate, second segment pale ferruginous, nearly naked, apical segments clothed with black pubescence, eyes round. Length 5—6 lines, expanse of wings 9 lines.

Hab.—Atlantic States.

43. **Mutilla Bexar**, n. sp.

Male.—Black; head rounded, not as wide as the thorax, closely punctured thinly clothed with erect black hairs; antennæ black, as long as the head and thorax; eyes round, prominent. Thorax subquadrate, slightly narrowed posteriorly, prothorax closely covered with confluent punctures, those on the mesothorax finer; metathorax roundly truncate, coarsely reticulated, dorsal groove not extending to the middle. Wings ample, fuliginous, slightly paler about the middle, marginal cell elongate subquadrate, abruptly truncate at tip; first submarginal nearly as large as the marginal, second receiving the first recurrent nervure a little before the middle, third pentagonal, its extreme nervure extending beyond the marginal; tegulæ ovate, punctured. Legs black, clothed with black hairs. Abdomen subpetiolate, first segment black, closely punctured, second bright ferruginous, finely punctured, thinly clothed with reddish pubescence; remaining segments blackish, punctured, clothed with black pubescence. Underside of second segment bearing a short longituginal carina towards the apical margin, ventral segments same as above. Length 4½—5½ lines, expanse of wings 7—10 lines.

Hab.—Texas.

44. **Mutilla Waco**, n. sp.

Female.—Dark fuscous, head quadrate, posterior angles rounded, not quite as wide as the thorax, closely reticulated, clothed with erect black hairs; scape of antennæ black, flagellum piceous; mandibles black; eyes round, polished. Thorax short, subquadrate, closely reticulated, metathorax abruptly truncate. Legs black, clothed with fuscous hairs, intermediate and posterior tibiæ armed with spines. Abdomen: basal segment subsessile with the second, closely punctured, clothed with black hairs; second segment bright ferruginous, finely reticulated, clothed with scattered ferruginous pubescence, and a few black hairs at base; apical segments dark fuscous, fringed with dark ferruginous, pubescence; underside chestnut brown, coarsely punctured, clothed with scattered pale glittering hairs. Length 5 lines.

Hab.—Texas. Taken on sandy roads.

45. **Mutilla macra**, Cresson, Proc. Ent. Soc. Phila., Vol. IV, p. 429.

Male.—Slender, black, densely pilose, abdomen petiolate, second segment above orange-yellow, wings blackish, eyes round. Length 5 lines; expanse of wings 7 lines.

Hab.—Texas.

46. **Mutilla apicalata**, n. sp.

Male.—Head round, black, clothed with pale golden pubescence; antennæ black; eyes round, prominent. Thorax coarsely punctured, pro- and metathorax clothed with scattered pale golden pubescence, the latter roundly truncate, scutellum black. Wings fuscous, paler about the middle, marginal cell sublanceolate, rounded at tip, first sub-marginal as large as marginal, second sub-

triangular, receiving the first recurrent nervure about the middle, third extending as far as the marginal; tegulæ large. Legs black, clothed with pale glittering hairs, calcaria white. Abdomen petiolate, petiole black, closely punctured, clothed with erect silvery hairs; second segment ferruginous, finely punctured, apical margin black, disk clothed with scattered erect hairs, third, fourth and fifth segments clothed with silvery pubescence, apex black; underside same as above. Length 5 lines, expanse of wings 9 lines.

Var. *a*.—Second abdominal segment entirely ferruginous; third, fourth and fifth segments sparsely clothed.

Hab.—Mexico. Prof. F. Sumichrast.

47. **Mutilla canella**, n. sp.

Male.—Black; head narrower than the thorax, sub-quadrate, posterior angles rounded, closely punctured, clothed with long black erect hairs, eyes large, round, convex; antennæ black, having the scape clothed with scattered black hairs. Thorax subquadrate, narrowed posteriorly, mesothorax elevated, closely punctured, metathorax roundly truncate, having the punctures much coarser and denser. Wings moderate, blackish, paler about the middle, marginal cell abruptly truncate at tip: three sub-marginal cells, the second subtriangular, receiving the first recurrent nervure a little before the middle, third, obsoletely defined, extending a little beyond the marginal cell. Legs black, clothed with long hairs of the same color, tibial spurs long. Abdomen ovate, gradually narrowed behind, basal segment nodose, coarsely punctured; second segment shining ferruginous, darker towards the base, finely punctured, thinly clothed with blackish hairs, lateral carinæ distinct; apical segments clothed with long dense, black pubescence, underside of entire abdomen closely punctured. Length 3½ lines, expanse of wings 6 lines.

Hab.—Texas.

48. **Mutilla macilenta**, n. sp.

Male.—Black; head rounded, not as wide as the thorax, closely punctured, thinly clothed with erect black hairs; eyes round, prominent; antennæ black. Thorax robust, gradually narrowed behind, closely punctured, thinly clothed with erect black hairs; metathorax abruptly rounded. Wings moderate, fuliginous, marginal cell broad, short, and obtusely rounded at tip, second submarginal subquadrate, not as large as the first, receiving the first recurrent nervure a little before the middle, third submarginal obsolete. Legs black, thinly clothed with pale hairs, calcaria long, rufo-piceous. Abdomen elongate ovate, basal segment elongate, much enlarged at apex, shining, closely punctured; second segment ferruginous, shining, finely punctured, thinly clothed with erect blackish hairs; lateral carinæ distinct, ventral surface having a central black line; apical segments closely fringed with long black hairs. Length 4 lines, expanse of wings 6 lines.

Hab.—Texas.

49. **Mutilla obscura**, n. sp.

Male.—Head black, rounded, closely punctured, clothed with obscure black and golden hairs, eyes round, polished, antennæ black, scape finely punctured. Thorax subovate, narrowed posteriorly, closely punctured, prothorax clothed with obscure yellow hairs, metathorax coarsely reticulated. Tegulæ convex, punctured. Wings fuliginous, paler about the middle, marginal cell elongate-ovate, rounded at tip, first submarginal moderately large, second subquadrate, re-

eciving the recurrent nervure before the middle, third obsolete. Legs black clothed with black hairs, calcaria pale. Abdomen petiolate, black, closely punctured, bearing a few erect black hairs; second and following segments dark brown, closely punctured, apical margins clothed with black pubescence, apex bearing a few obscure yellow hairs. Length 4 lines, expanse of wings 6 lines.

Hab.—Massachusetts. Coll. of Prof. Agassiz.

50. **Mutilla gibbosa**, Say. Bost. Jour. I, p. 198, 6.

Male.—Black, thinly clothed with scattered pale hairs, wings fusco-hyaline, marginal cell ovate, abdomen petiolate, shining, finely punctured, eyes round. Length 3½ lines, expanse of wings 5 lines.

Hab.—Western States.

51. **Mutilla Wilsoni**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 112.

Male.—Black, more or less clothed with silvery-white pubescence, wings hyaline, with a fuscous cloud at middle and apex, eyes round. Length 4½ lines, expanse of wings 8½ lines.

Hab.—Cuba.

52. **Mutilla azteca**, n. sp.

Male.—Black; head not as wide as the thorax, sub-quadrate, clothed with dense pale golden pubescence; antennæ and mandibles black; eyes round, prominent. Thorax robust, narrowed posteriorly, pro- and mesothorax rugose, the former with pale golden pubescence, the latter elevated, metathorax coarsely reticulated, abruptly truncate behind. Wings fusco-hyaline, marginal cell short, abruptly truncate at tip, first sub-marginal about as large as marginal, second receiving the first recurrent nervure a little before the middle, third about equal to the second, and extending a little beyond the marginal. Legs black, clothed with whitish hairs, calcaria white. Abdomen elongate ovate, petiole coarsely punctured, clothed with scattered, erect, whitish hairs; second segment rugulose, with a broad band of pale golden pubescence at the base, posterior half clothed with black, third and fourth segments clothed with pale golden pubescence, apex black; underside of second segment finely punctured, thinly clothed with pale hairs; margins of ventral segments fringed with pale golden pubescence. Length 5¼ lines, expanse of wings 7½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

This species is closely allied to *Wilsoni*, Cresson, but may be distinguished by the large size of abdomen, and the clothing which is much more dense, and the clouding of the wings which is more suffused, the margins of the fuscous portions in *Wilsoni* being sharply defined.

53. **Mutilla melanosoma**, n. sp.

Female.—Deep black, head rounded with narrow lunate band of pale golden pubescence between the eyes; antennæ black, scape clothed with fine glittering hairs; eyes round, prominent. Thorax subquadrate, narrowed posteriorly, coarsely reticulated, anterior angles armed with a short tooth; mesothorax with two subovate spots of pale golden pubescence, behind which, on the metathorax, are two narrow longitudinal lines of the same. Legs black, thinly clothed with glittering white hairs, intermediate and posterior tibiæ armed with a row of spines, calcaria white tipped with brown. Abdomen ovate

clothed with dense black pubescence, second segment with two small ovate dusky fulvous maculæ at the base, and two larger ones of the same before the apical margin, on the middle of which is a small round spot of pale golden pubescence, the apical segments adorned with a row of similar spots; ventral segments and lateral sutures clothed with pale golden pubescence. Length 7½ lines.

Hab.—Panama. Collection of Mr. Norton.

54. **Mutilla trisignata**, n. sp.

Female.—Black, head round, clothed with dense pale golden pubescence, interspersed with scattered erect black hairs, eyes ovate. Thorax ovate, suddenly narrowed posteriorly, coarsely punctured, the disc densely clothed with pale golden pubescence, the front and sides bearing long black hairs, metathorax truncate. Legs black, thinly clothed with pale hairs, intermediate and posterior tibiæ armed with spines. Abdomen ovate, petiolate, basal segment finely punctured, the disc thinly clothed with pale golden pubescence, second and following segments clothed with dense black pubescence, the former bearing three round spots of pale golden pubescence, the one at base small, the others larger and placed laterally near the apical margin; apex with a small spot of pale pubescence. Underside of second segment coarsely punctured, ventral segments fringed with pale glittering hairs. Length 4½ lines.

Hab.—Florida. In the Harris collection.

55. **Mutilla Iztapa**, n. sp.

Male.—Black; head round, not as wide as the thorax, clothed with coarse fulvous pubescence; antennæ and mandibles black: eyes round, prominent. Thorax short, dilated at middle, pro- and disc of metathorax clothed with coarse fulvous pubescence, the latter roundly truncate, coarsely punctured, clothed with long pale erect hairs. Wings fuliginous, sub-hyaline at middle, marginal cell subovate, abruptly truncate at tip, second submarginal elongate, pointed towards the base, near which it receives the recurrent nervure. Tegulæ round, finely punctured. Legs black, clothed with pale hair, calcaria long. Abdomen ovate, second segment finely punctured, with a broad, lunate, polished, dull yellowish band on the disk, bearing a thin scattered pubescence, posterior margin and third segment clothed with black pubescence, apical segments clothed with pale fulvous. Underside of entire insect sprinkled with pale hairs. Length 6 lines, expanse of wings 11 lines.

Hab.—Honduras. Collection of Mr. Norton.

This may prove to be the male of *Proserpina*.

56. **Mutilla Proserpina**, n. sp.

Female.—Black; head round, not as wide as the thorax, clothed with dense bright cupreous pubescence, antennæ and mandibles black; eyes round, prominent. Thorax robust, subquadrate, sides produced into an obtuse tooth, anterior angles acute, mesothorax, black, rugose; metathorax, abruptly truncate behind, clothed with dense bright ferruginous pubescence, having a central black patch on the posterior surface. Legs black, finely punctured, clothed with silvery hairs, intermediate and posterior tibiæ armed exteriorly with long sharp spines. Abdomen ovate, closely punctured, basal segment dentate at base, second segment with four pale luteous spots, thinly clothed with pubescence of the same color, the two at the base round, those near the apical mar-

gin ovate, the fourth segment and sides of the others clothed with pale golden pubescence; lateral carinæ distinct; underside of entire insect clothed with pale hairs. Length 5½ lines.

Hab.—Honduras. Collection of Mr. Norton.

57. **Mutilla Cressoni,** Blake, Trans. Am. Ent. Soc. 1870, Vol. III, p. 68.

Female.—Black; clothed with dense golden pubescence; head sub-quadrate, somewhat narrower than the thorax, posterior angles rounded. Antennæ rufo-piceous, flagellum clothed with scattered glittering hairs. Eyes prominent, polished, rounded. Thorax sub-ovate, narrowed posteriorly, and abruptly truncate, mesothorax with lateral carinæ, disc black, coarsely granulate, with a few scattered black hairs, and margined with dark golden pubescence. Abdomen ovate, deeply punctured, basal segment black, the apical margin fringed with pale pubescence, second segment with two ovate fulvous spots at the basal margin, and a broad anteriorly emarginate band of the same color near the apical margin, clothed with deep golden pubescence; third and fourth segments black, with a longitudinal line of paler pubescence, forming the black ground into two lateral quadrate spots; fifth and sixth segments clothed entirely with pale golden pubescence, apex black. Ventral segments fringed with pale golden hairs. Legs black, intermediate and posterior tibiæ armed with a row of spines, and clothed with long pale hairs. Entire insect beneath clothed with long pale glittering hairs. Length 9 lines.

Hab.—Mexico.

58. **Mutilla Nortoni,** Blake, Trans. Am. Ent. Soc. Vol. III, p. 68.

Female.—Head rounded, wider than the prothorax, posterior angles more acute than in the preceding species, coarsely punctured, clothed with short golden pubescence, interspersed with longer hairs. Antennæ black, naked. Eyes round, prominent, polished. Thorax black, narrowed posteriorly, somewhat constricted, coarsely punctured, with a broad discal band clothed with appressed, bright golden pubescence, metathorax slightly truncate, sides clothed with a dense silvery pile. Abdomen ovate, coarsely punctured, basal segment clothed with pale golden pubescence; second segment with four orange spots, clothed with a scattered golden pubescence, the two at the basal margin sub-triangular, those on the apical margin are larger and nearly joined together, third and fourth segments black, fifth and sixth with golden pubescence, apex black; ventral segments fringed with long pale hairs. Legs black, middle and posterior tibiæ and tarsi clothed with silvery hairs, those on the tarsi being longer and much more dense. Underside of thorax and abdomen clothed with obscure greyish hairs. Length 8 lines.

Hab.—Mexico.

Closely resembles *M. Cressoni*, but is readily distinguished by the bands on the thorax, and by the less robust form.

59. **Mutilla Toluca,** n. sp.

Female.—Black; head rounded, clothed with dense pale ochraceous pubescence; antennæ black; eyes round, prominent. Thorax ovate, narrowed pos-

teriorly, clothed with coarse black, meso- and metathorax with coarse ochraceous pubescence, sides of the latter black, abruptly truncate. Legs black, clothed with scattered glittering hairs, intermediate and posterior tibiæ armed with spines. Abdomen ovate, basal segment clothed with pale hairs; second segment closely punctured, having two small ovate spots at the base, and a broad, internally emarginate band of coarse ochraceous pubescence, pointed towards the apex; apical segments clothed with similar pubescence; underside of entire insect clothed with pale hairs. Length 5 lines.

Hab.—Mexico. Prof. F. Sumichrast.

60. **Mutilla Ariadne**, n. sp.

Female.—Head rounded, not quite as wide as the thorax, black, rugose, with a few scattered erect hairs; antennæ black; eyes round, polished. Thorax short, suddenly narrowed behind, clothed with bright golden pubescence; mesothorax with a triangular black, granulate patch; mesothorax abruptly truncate; sides deeply compressed, coarsely punctured, clothed with silvery pubescence. Legs black, clothed with scattered silvery hairs, intermediate and posterior tibiæ armed exteriorly with a row of spines. Abdomen ovate, basal segment black, its apical margin clothed with silvery pubescence; second segment coarsely punctured, clothed with bright golden pubescence, having on the disk a large ovate black patch, extending to the basal margin, on each side of which is a small one of the same color, with thin black pubescence, apical margin black; third and fourth segments clothed with dense black pubescence, fifth bright golden, apex black. Underside black, closely punctured, ventral segments fringed with pale golden mixed with silvery hairs. Length 3½—5 lines.

Hab.—Mexico. Prof. F. Sumichrast.

In some specimens the head is clothed with a dense golden pubescence.

61. **Mutilla Solola**, n. sp.

Female.—Black; head rounded, densely clothed with coarse, deep golden pubescence; antennæ black; eyes round, prominent. Thorax short, clothed similar to the head, except a round black patch on the disc of mesothorax, which is laterally produced into obtuse angles, metathorax abruptly truncate behind. Legs black, thinly clothed with pale hairs; intermediate and posterior tibiæ armed exteriorly with a row of strong spines, calcaria black. Abdomen broadly ovate, closely punctured, basal segment small, second segment having a broad emarginate band of deep golden pubescence at its apical margin, and two round spots of the same color, placed laterally near the base; third segment clothed with deep black, apical segments with pale golden pubescence. Underside coarsely punctured, lateral carinæ distinct, ventral segments fringed with pale glittering hairs. Length 3½—4 lines.

Hab.—Guatemala. Prof. F. Sumichrast.

Closely allied to *M. Crossoni*.

62. **Mutilla arachnoides**, Smith, Cat. Brit. Mus. Hym. III, p. 57, 281.

Female.—Black; densely pubescent, that on the head ochraceous. Thorax and legs covered with ochraceous pubescence, the former having a large rounded patch of black on the disc; the abdomen is also covered with ochraceous pubescence, the second segment having a large trilobate black pubescent patch, which extends from the basal to the apical margin of the segment; the fifth and sixth segments are covered with black pubescence, the sides being pale. Length 5½ lines.

Hab.—Mexico.

A very distinct and well marked species. In the series before me the individuals vary in length from 5 to 6½ lines.

63. **Mutilla formosa**, n. sp.

Female.—Head quadrate, slightly wider than the thorax, clothed with dense bright golden pubescence, interspersed with erect hairs of the same color: antennæ piceous, mandibles rufo-piceous, tips black; eyes round, prominent. Thorax short, sub-ovate, finely reticulated, anterior margin fringed with deep golden pubescence, behind which is a lunate patch of brownish-black, apical half clothed with glittering pale golden pile, metathorax roundly truncate, with a small obtuse black tooth on each side: sides of thorax clothed with silvery pubescence. Legs rufo-piceous, clothed with glittering silvery hairs, intermediate and posterior tibiæ armed with a row of spines, posterior femora with an acute tooth, calcaria pale yellow tipped with brown. Abdomen ovate, apical margin of basal segment clothed with silvery pubescence, second segment clothed with glittering, pale golden pile, with a round patch of black pubescence at the base, connected with the apical margin, which is of the same color, by a narrow line, third and fourth segments clothed with pale, the fifth with dark golden pubescence, apex black. Underside closely punctured, thinly clothed with silvery hairs, lateral sutures fringed with silver, ventral segments same as above. Length 3—5½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

64. **Mutilla baloplus**, n. sp.

Female.—Head quadrate, wider than the thorax, posterior angles subacute, clothed with dense golden pubescence: antennæ rufo-piceous; eyes round prominent. Thorax subovate, closely reticulate, narrowed posteriorly, clothed with golden pubescence, mesothorax with a subcordate black patch on the disc, metathorax abruptly truncate. Legs rufous, thinly clothed with fine, glittering hairs, calcaria pale. Abdomen ovate, second segment thinly clothed with glittering golden pile, on the disc is a round, brown-black spot connecting with the apical margin, which is black, remaining segments clothed with golden pubescence; ventral segments fringed with pale hairs.

Hab.—Mexico. Prof. F. Sumichrast.

65. **Mutilla Altamira**, n. sp.

Female.—Head rounded, not as wide as thorax, clothed with bright golden pubescence, interspersed with erect hairs; antennæ and mandibles black: eyes round, prominent. Thorax short, slightly dilated at middle, closely reticulated, anterior angles acute, mesothorax black, metathorax abruptly truncate,

clothed with bright golden pubescence, a round black spot on the disc, on each side of which is a small tubercle. Legs black, thinly clothed with glittering hairs. Abdomen ovate, narrowed to apex, basal segment black, closely punctured, apical margin clothed with bright, pale golden pubescence; second segment thinly clothed with glittering golden pubescence, bearing on disc a large sub-triangular black patch, below which the tegument has a pale rufous tinge apical margin fringed with silvery pubescence, third segment black, apical segments adorned with pale golden pubescence; lateral sutures fringed with silvery pile: underside dark ferruginous. Length 4—4½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

66. **Mutilla Xalisco**, n. sp.

Female.—Head round, not as wide as the thorax, clothed with bright golden pubescence: scapè of antennæ and mandibles rufous, tips of the latter black; eyes round, large, prominent. Thorax short, subovate, closely reticulate, mesothorax black, metathorax clothed with bright golden pubescence, roundly truncate behind. Legs rufo-piceous, clothed with scattered glittering hairs, intermediate and posterior tibiæ armed with spines, calcaria white. Abdomen ovate, basal segment clothed with silvery pubescence on its apical margin, second segment black, having a broad band of fine, golden pubescence, slightly contracted at the middle, third, with a small central patch of pale pubescence, following segments similarly clothed; underside dark chestnut brown, irregularly punctured. Length 2½—3 lines.

Hab.—Mexico. Prof. F. Sumichrast.

67. **Mutilla Ulkei**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 387.

Female.—Black; thorax clothed with dense silvery pile, abdomen ferruginous, head wider than the thorax, eyes round. Length 5½ lines.

Hab.—Lower California.

68. **Mutilla nigriceps**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 110.

Female.—Rufous: head, antennæ, and base and apex of abdomen black, the latter having a pale yellowish band before the tip; eyes round. Length 6—7 lines.

Hab.—Cuba.

69. **Mutilla floridana**, n. sp.

Female.—Head round, black, vertex clothed with pale golden pubescence, interspersed with scattered erect black hairs; eyes ovate. Thorax ovate, narrowed posteriorly, rufo-ferruginous, closely punctured, the mesothorax produced laterally into obtuse tubercles, and bearing long, erect black hairs, metathorax abruptly truncate. Legs black, except the posterior femora, which are rufo-fuscous, clothed with pale hairs, intermediate and posterior tibiæ armed with short strong spines. Abdomen ovate, black, sparsely clothed with long erect black hairs, basal segment campanulate, clothed with pale golden pubescence, second segment having at the base a round spot of pale golden pubescence, and two similarly clothed subquadrate lateral spots at the apical margin. Underside of second segment shining, finely punctured, ventral segments fringed with pale glittering pubescence. Length 4½ lines.

Hab.—Florida. Harris Collection. This may be a variety of *M. trisignata*, but is easily distinguished by the shape and color of the

thorax, and the basal segment of the abdomen not being petiolate.

70. **Mutilla tolteca**, n. sp.

Female—Head rounded, wider than the thorax, closely and finely punctured, densely clothed with fine, pale golden pubescence, cheeks, and a patch behind each eye black; eyes ovate, large: antennæ and mandibles dark ferruginous, tips of the latter black, Thorax ovate, narrowed behind, closely reticulate, dark ferruginous, anterior margin black, with a small ovate tubercle on each side, mesothorax with two small irregularly defined patches of pale golden pubescence, behind each of which is a small obtuse tooth; metathorax rounded posteriorly, with two lateral stripes of pale golden pubescence. Legs ferruginous, thinly clothed with glittering hairs; calcaria whitish. Abdomen ovate, suddenly narrowed to apex, basal segment subcylindrical, densely clothed with pale golden pubescence, mixed with scattered erect pale hairs; second segment densely punctured, dark ferruginous on the sides and anterior margin, near which are two ovate, exteriorly emarginate maculæ of pale golden pubescence, behind which the dorsal surface of the segment is nearly black; on the apical margin is a band of pale golden pubescence, deeply emarginate internally at the middle, and which extends along the underside of the segment to the base; the third segment has a band of the same, with a small triangular, dark ferruginous space at middle; the remaing segments banded in the same manner, all having lateral blackish patches; apical segments closely punctured. Underside of second segment paler than above, closely punctured, and having a central longitudinal carina. Length 4 lines.

Hab.—Mexico. Prof. F. Sumichrast.

71. **Mutilla 4-guttata**, Say, Western Qarterly Reporter, II, p. 74.

Female.—Head and thorax ferruginous, the former subquadrate; abdomen black, second segment densely and finely punctured, bearing four yellow spots, two at the base, round, two on disc, before the apical margin, subovate; eyes round. Length 5—6 lines.

Hab.—Texas; Western States.

72. **Mutilla Cypris**, n. sp.

Female.—Dark ferruginous; head round, as wide as the thorax, closely punctured, mandibles and antennæ black; eyes round, convex. Thorax elongate-ovate closely covered with confluent punctures, slightly constricted behind the middle, with a small tubercle in the constriction; metathorax roundly truncate. Legs testaceous, knees black, thinly clothed with pale hairs, intermediate and posterior tibiæ armed with long spines. Abdomen elongate ovate, basal segment fringed with pale golden pubescence; second segment covered closely with elongate punctures, and having four small honey-yellow maculæ, two at the base, the others placed a little before the apical margin, which is fringed with pale golden pubescence; apical segments blackish, clothed with appressed pale golden hairs; ventral segments same as above. Length 5—6½ lines.

Hab.—Georgia.

73. **Mutilla ferrugata**, Fab. Syst. Piez. p. 438, 47. ♀.
Oliv. Ency. Méth. VIII, 61, 34.
St. Farg. Hym. III, 608. 21.

Hab.—United States.

This species varies greatly both in size and ornamentation of second abdominal segment. In some individuals the black spot on basal middle is large and very distinct, while in others it is obsolete; in some there is an oblique black line on each side towards base, leaving a ferruginous spot in each basal corner; the apical margin is more or less broadly black, sometimes with a continuous fringe of pale pubescence, occasionally interrupted medially, but generally the pale fringe is only lateral, while in other specimens there is in addition a small central patch. The third and remaining segments have generally an apical fringe, but in two specimens only this fringe is lateral on third segment; the apical fringe of first segment is sometimes black and sometimes pale. The scape of antennæ and legs vary from deep black to entirely ferruginous, the latter more or less densely clothed with long pale pubescence; in one specimen from Washington Territory the pubescence of legs is entirely black

74. **Mutilla mutata**, n. sp.

Female.—Ferruginous; head rounded, transverse, finely and densely punctured, mandibles blackish at tip; antennæ nigro-fuscous; eyes small, round, convex. Thorax robust, ovate, slightly narrowed posteriorly, coarsely punctured, armed at the sides with two obtuse tubercles, metathorax roundly truncate. Legs black, thinly clothed with pale glittering hairs. Abdomen ovate, second segment with four pale ferruginous spots, two at base, small, those at apical margin larger; the remaining segments fusco-ferruginous, the apical margins fringed with pale yellowish or white pubescence. Length 4—6 lines.

Hab.—Atlantic and Southern States.

Upon the examination of a large series of specimens, this may prove to be only a variety of *ferrugata*. It is distinguished by the more or less distinct pale spots on the second abdominal segment, thorax is rather shorter and broader, and the color of the apical fringe of the segments varies precisely as in *ferrugata*.

75. **Mutilla scævola**, n. sp.

Female.—Ferruginous; head subquadrate, posterior angles rounded, slightly wider than the thorax, finely punctured, thinly clothed with appressed reddish-golden pubescence; antennæ fuscous, mandibles blackish at tips; eyes round, prominent. Thorax ovate, much narrowed posteriorly, closely punctured; sides of metathorax smooth. Legs blackish, thinly clothed with pale glittering hairs, calcaria whitish. Abdomen ovate, the second segment having on the disc near apical margin two large subquadrate patches of pale ferruginous, and occasionally two small spots of the same color at basal margin; apical margins of all the segments fuscous, third, fourth and fifth fringed with pale silky pubescence. Length 3—4½ lines.

Hab.—Atlantic States.

This is very near to *Mutata* from which it differs by its much

smaller size, by the second abdominal segment having generally only two large subquadrate or ovate pale ferruginous spots and by the thorax being slightly longer and narrower posteriorly.

76. **Mutilla balteola**, n. sp.

Female.—Ferruginous; head rounded, closely covered with confluent punctures, mandibles blackish at tips, antennæ fuscous, eyes small, round, polished. Thorax elongate-ovate, narrowed posteriorly, sides armed with two small tubercles, sparsely clothed with short pale hairs. Legs fuscous, or blackish, thinly clothed with pale hairs. Abdomen elongate-ovate, the basal segment clothed on middle of disc and apical margin with pale pubescence, second segment closely and finely punctured, the posterior margin stained with darker color, and fringed with white pubescence, remaining segments blackish, clothed with black hairs, apex with pale pubescence; underside paler. Length 3—5 lines.

Hab.—Atlantic States; Texas.

This species varies considerably in size. Easily recognised by the continuous pure white fringe at apical margin of second abdominal segment.

77. **Mutilla propinqua**, Cresson, Proc. Ent. Soc. Phil. IV, p. 433.

Male.—Black; thorax clothed with golden pubescence, wings dark fuscous, eyes round. Length 4½ lines, expanse of wings 7½ lines.

Hab.—Colorado.

78. **Mutilla Oceola**, n. sp.

Male.—Black; head rounded, narrower than the thorax, densely and finely punctured, thinly clothed with black pubescence: antennæ black; eyes round and prominent. Thorax robust, subquadrate, narrowed posteriorly, densely and finely punctured, clothed with scattered black hairs; metathorax rounded, coarsely reticulated; tegulæ ovate very finely reticulated. Wings fuliginous, marginal cell elongate ovate, rounded at tip, first submarginal nearly as large as the marginal, narrowed towards the base, second subtriangular, its basal nervure sinuate, and receiving the first recurrent at the middle, third narrowed beneath, indistinctly defined. Legs black, the intermediate and posterior tibiæ and tarsi clothed with pale brownish pubescence, calcaria pale. Abdomen ovate, basal segment black, shining, punctured, bearing a few black hairs, second segment ferruginous, shining, finely and remotely punctured, interspersed with short ferruginous hairs, its apical margin and following segments, black, densely clothed with black pubescence; underside of second segment darker than above. Length 5 lines, expanse of wings 8 lines.

Hab.—Florida, Southern States. Collection of Mr. Norton.

This may prove to be the male of *M. dubitata*, Smith.

79. **Mutilla Sanbornii**, n. sp.

Male.—Head black, rounded closely punctured, thinly clothed with erect black hairs; eyes round, convex, polished; antennæ black. Thorax elongate subquadrate, rounded in front, closely punctured, sparsely clothed with black hairs, metathorax roundly truncate, coarsely reticulate. Tegulæ convex, very finely punctured. Wings pale fuliginous, slightly paler towards base, marginal cell ovate-lanceolate, rounded at tip, first submarginal large, narrow, second

subtriangular, receiving the first recurrent at middle, its basal nervure sinuate, third pentagonal, with abbreviated nervures from its exterior angles. Legs black, thinly clothed with black and white hairs, femora minutely punctured, calcaria white. Abdomen ferruginous, basal segment campanulate, closely punctured, punctures finer at apical margin, which is fuscous, and fringed with dark hairs; second segment closely punctured, thinly clothed with glittering white hairs, apical margins fuscous, thinly fringed with black hairs, third and fourth segments, somewhat darker, finely punctured, apex black. Length 3½ lines, expanse of wings 5½ lines.

Hab.—Massachusetts. Coll. of Prof. Agassiz.

This may prove to be the male of *M. simillima*, Smith.

To Mr. Sanborn, from whom I have received some interesting material in this family, I respectfully dedicate this species.

80. **Mutilla flavida**, n. sp.

Male.—Head and thorax black, the former subquadrate, posterior angles rounded, closely punctured, vertex thinly clothed with pale yellowish hairs, eyes round, prominent. Thorax closely punctured, prothorax, sides and scutellum clothed with pale hairs, metathorax roundly truncate, closely reticulate. Tegulæ ovate, closely punctured. Wings pale fuscous, faintly iridescent, marginal cell elongate-ovate, rounded at tip; first submarginal long and narrow; second subtriangular, obliquely narrowed towards base, its basal nervure sinuate, receiving the first recurrent at middle, third narrowed beneath, receiving the second recurrent at middle, its apical nervure faintly defined. Legs black, thinly clothed with pale hairs, calcaria pale. Abdomen elongate ovate, basal segment campanulate, fuscous, finely punctured, the apical margin fringed with golden pubescence, second segment, except base and apical margins, which are fuscous, bright yellow, finely punctured, the punctures more dense at sides, remaining segments black, margined with fuscous, finely punctured, fringed with orange-yellow pubescence; underside of abdomen blackish-brown, finely punctured. Length 5 lines, expanse of wings 7½ lines.

Hab.—Texas.

81. **Mutilla laticeps**, n. sp.

Male.—Black; head quadrate, wider than the thorax, posterior margin concave, angles acute, very finely punctured, clothed with scattered white hairs; antennæ and mandibles black, the latter clothed with fine white hairs; eyes round. Thorax elongate quadrate, pro- and mesothorax finely punctured, metathorax reticulated, rounded. Wings sub-hyaline, iridescent, submarginal cell ovate-lanceolate, first submarginal, bisected by a white line, second, receiving the first recurrent nervure a little before the middle; tegulæ round, polished. Legs black, clothed with white hairs, calcaria white. Abdomen ovate, shining, first segment campanulate, with a small tubercle on each side near the base, second segment with remote, minute punctures, bearing a few scattered silvery hairs; apical segments thinly fringed with the same. Underside of entire insect clothed with scattered hairs. Length 3 lines, expanse of wings 5½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

82. **Mutilla Xalapa**, n. sp.

Male.—Black, head rounded, thinly clothed with erect pale hairs; antennæ

black; eyes round, prominent. Thorax elongate ovate, prothorax rounded in front, finely punctured, posterior margin carinate; bearing a few erect, pale hairs; mesothorax finely punctured; metathorax roundly truncate; coarsely reticulate. Wings pale fuliginous, paler towards the base; marginal cell ovate, roundly truncate at tip, second submarginal receiving the recurrent nervure a little beyond the middle, a faint hyaline streak running through the first and second submarginal cells; tegulæ round, finely punctured. Legs black, clothed with pale glittering hairs, calcaria white. Abdomen elongate ovate, shining, finely punctured, apical margins of all the segments ciliated with silvery pubescence; underside of entire insect sprinkled with pale hairs Length 4½ lines, expanse of wings 7 lines.

Hab.—Mexico. Prof. F. Sumichrast.

83. **Mutilla Zapoteca**, n. sp.

Male.—Black; head subquadrate, posterior angles rounded, closely punctured, thinly clothed with yellowish-white hairs, antennæ black, eyes moderate, convex, rounded; mesothorax elevated, coarsely punctured; metathorax rounded and posteriorly truncate, coarsely punctured. Wings sub-hyaline, with an iridescent lustre, marginal cell moderately long rounded at tip, three sub-marginal cells, first about as large as the marginal, the second subtriangular, receiving the first recurrent nervure about the middle, the third obsoletely defined, and not extending beyond the marginal. Legs black, tibiæ clothed with long pale glittering hairs. Abdomen ovate, basal segment sub-sessile with the second, both of which are polished, moderately punctured, and thinly clothed with erect pale golden yellow hairs; apical segments clothed with dense pale golden pubescence. Length 3½ lines, expanse of wings 5 lines.

Hab.—Mexico. Prof. F. Sumichrast.

84. **Mutilla Gila**, n. sp.

Male.—Black; entire insect closely punctured, head subquadrate, posterior angles rounded; mouth clothed with pale pubescence; eyes round. Thorax elongate-ovate, metathorax roundly truncate, finely reticulate. Wings ample, hyaline, iridescent, marginal cell elongate-ovate, pointed to tip, first sub-marginal nearly as long as the marginal, second sub-triangular, pointed towards base, receiving the recurrent nervure before the middle; nervures fuscous. Legs black, thinly clothed with pale hairs. Abdomen ovate, the segments fringed with glittering white hairs; entire insect sprinkled with pale pubescence. Length 1¾ lines, expanse of wings 3 lines.

Hab.—Texas; Belfrage.

85. **Mutilla Robinsonii**, n. sp.

Female.—Black; head quadrate, double the width of thorax, posterior angles produced into acute spines, densely punctured, vertex clothed with dense bright, deep golden pubescence; cheeks prominent, finely punctured, thinly clothed with pale glittering hairs; on the cheeks below the eyes are two small bilobed tubercles ferruginous in front, just beneath which there is a stout tooth on each side, projecting behind, ferruginous at tip; below these, are two others much larger, projecting beneath, black, shining, finely punctured, and clothed

at base with pale glittering hairs. Mandibles stout, with a tooth about one third of their length from the tips, a bright ferruginous dash before the tooth. Antennæ black, the scape thinly clothed with pale glittering pubescence, Eyes prominent, round, polished. Thorax subquadrate, slightly constricted, reticulate, anterior angles armed with a small tooth; disc clothed with bright golden pubescence, except a rounded black patch on mesothorax, and a longitudinal patch of the same color on the metathorax, which is abruptly truncate. Legs black, clothed with pale glittering hairs, the intermediate and posterior tibiæ armed exteriorly with a row of spines; tarsal joints fringed with ferruginous hairs, calcaria pale ferruginous; extremity of anterior tibiæ, and first joint of tarsi, deeply emarginate, with the spur lanceolate. Abdomen ovate, basal segment broad at its apical margin, clothed with pale golden pubescence, second segment finely punctured, clothed with dense black pubescence, and bearing two large quadrant-shaped fulvous patches, the third and following segments fringed with pale golden pubescence, underside of entire insect thinly clothed with pale hairs. Length 8¼ lines. Five specimens.

Hab.—Mexico. Prof. F. Sumichrast.

In some specimens the basal joint of abdomen is entirely black.

This species is nearly allied to *capitata*, Smith, but is readily distinguished by the shape of the thorax, and the greater width of the head in proportion to the thorax, as well as the large tooth behind the mandibles.—It gives me great pleasure to dedicate this beautiful species to my friend Mr. Coleman T. Robinson of New York, from whom I have received many entomological favors.

86. **Mutilla capitata**, Smith, Cat. Brit. Mus. Hym. III, p. 59. No. 284.

Female.—Black; head quadrate, wider than the thorax, densely clothed with pale golden pubescence. Thorax short, broad, and narrowed posteriorly; second abdominal segment having a large tranverse yellow macula, clothed with golden pubescence. Eyes round. Length 8 lines.

Hab.—Mexico.

87. **Mutilla Lerma**, n. sp.

Female.—Head sub-quadrate, wider than the thorax, posterior angles rounded cheeks produced into an acute tooth, dark ferruginous, vertex thinly clothed with scattered golden pile, interspersed with a few erect hairs; face, scape of antennæ, and mandibles rufous, the latter black at tips; eyes round, prominent. Thorax finely reticulated, sub-ovate, contracted behind the mesothorax, which, with the anterior angles is armed at the sides with a stout tooth, metathorax gradually rounded posteriorly, with a row of small teeth on each side; lateral declivities polished. Legs rufous, clothed with glittering hairs, intermediate and posterior tibiæ armed with spines. Abdomen ovate, very finely punctured, dark chestnut-brown, second segment having a broad band of appressed bright golden pubescence, posteriorly emarginate, apical margin nearly black; the remaining segments thinly clothed with bright golden pubescence; underside paler than above, finely punctured, shining. Length 3 lines.

Hab.—Mexico. Prof. F. Sumichrast.

Allied to *denticulata*, Smith, but may be distinguished from that species by the cheeks being spined, and the absence of the abdominal tubercles.

88. **Mutilla canadensis**, n. sp.

Female.—Fusco-testaceous, head subqudrate, wider than the thorax, posterior angles acute, finely punctured, face fuscous, antennæ and mandibles pale rufous, tips of the latter black; eyes black, round, polished. Thorax short, quadrate, anterior angles acute, sides crenulated, densely and finely punctured, metathorax roundly truncate. Legs rufo-testaceous, thinly clothed with pale glittering hairs, calcaria white. Abdomen ovate, second segment finely punctured, clouded towards the base with dark stains, apical margin, and remaining segments, dark fuscous, thinly clothed with pale golden pubescence. Length 2¼ lines.

Hab.—Canada.

89. **Mutilla bisignata**, n. sp.

Female.—Head subquadrate, wider than the thorax, posterior angles not rounded, vertex and face clothed with pale golden pubescence, posterior margin black, cheeks prominent, clothed with silvery hairs; antennæ black; eyes round, polished. Thorax short, suddenly narrowed behind, clothed with pale golden pubescence, mesothorax with triangular, granulate, black patch, metathorax abruptly truncate. Legs rufo-piceous, clothed with pale glittering hairs. Abdomen ovate, basal segment black, second segment with a large sub-quadrate black patch on the disc, surrounded by an emarginate band of golden pubescence, enclosing two small lateral black spots, apical margin clothed with dense black pubescence; remaining segments fringed with silvery pubescence: ventral segments thinly clothed with long pale hairs. Length 5 lines.

Hab.—Mexico. Prof. F. Sumichrast.

90. **Mutilla connectens**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 387.

Female.—Obscure ferruginous; head and abdomen densely clothed with golden pile, head wider than the thorax, eyes round. Length 4½—5 lines

Hab.—Lower California.

91. **Mutilla contumax**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 437.

Female—Obscure rufous; head and abdomen clothed with silvery-ochraceous pubescence, head wider than the thorax, eyes round, Length 5 lines.

Hab.—Colorado.

92. **Mutilla gothica**, n. sp.

Female.—Head and thorax dark ferruginous, densely and finely reticulated, thinly clothed with pale golden pubescence, interspersed with blackish hairs; head slightly wider than the thorax, quadrate, posterior angles rounded hind margin blackish; antennæ: scape, and first joint of flagellum ferruginous, mandibles black at tip; eyes large, round, polished. Thorax quadrate, metathorax abruptly truncate, coarsely reticulated, lateral declivities concave, polished. Legs ferruginous, thinly clothed with pale glittering hairs, intermediate and posterior tibiæ armed externally with spines, calcaria pale. Abdomen ovate, basal segment ferruginous, darker towards the apical margin, which is fringed with pale golden pubescence; second segment pale fulvous, having on the disc an

elongate quadrate black patch, extending from the apical margin to the base, where it terminates in a point, on each side of which there is an ovate spot of the same color near the anterior margin, apical segments blackish, clothed with pale golden pubescence. Underside of entire insect ferruginous. Length 4 lines.

Hab.—Mexico. Prof. F. Sumichrast.

93. **Mutilla Izucar**, n. sp.

Female.—Head and thorax ferruginous, the former quadrate, posterior angles acute, wider than thorax, finely reticulate; scape of antennæ and mandibles rufous, tips of the latter black; eyes round. Thorax short, subquadrate, rounded in front, slightly constricted at the sides, which are finely dentate, metathorax abruptly truncate, coarsely reticulate. Legs rufo-testaceous, with a few glittering hairs, intermediate and posterior tibiæ armed with spines, calcaria white. Abdomen ovate, second segment with a broad band of pale golden pile on the apical margin, having a semicircular notch on its anterior edge, apical segments fringed with pale golden pubescence; underside dark rufous, inclining to black at the base. Length 3 lines.

Hab.—Mexico. Prof. F. Sumichrast.

94. **Mutilla Chiapa**, n. sp.

Female.—Head and thorax ferruginous, closely and finely punctured, the former quadrate, posterior angles acute, wider than the thorax; antennæ: scape and first joint of flagellum rufous, mandibles black at tips; eyes round, polished. Thorax short, subquadrate, rounded in front, slightly constricted at sides, metathorax abruptly truncate. Legs pale rufous, thinly clothed with whitish hairs, intermediate and posterior tibiæ armed with long spines, calcaria pale. Abdomen ovate, black, apical margin of basal segment fringed with pale golden pubescence, second segment having a lunate band of pale golden pubescence, connected with the anterior margin by two longitudinal lines of the same, apical segments fringed with pale golden pubescence; ventral segments same as above. Length 3½ lines.

Hab.—Mexico. Prof. F. Sumichrast.

95. **Mutilla cruciata**, Smith, Cat. Brit. Mus. Hym. III, p. 42. No. 206.

Female.—Head and thorax ferruginous, the former quadrate, the posterior angles acute: the cheeks produced into an obtuse spine; the posterior margin of the vertex and the sides of the head fuscous; the vertex more or less adorned with silvery pile; the antennæ rufo-fuscous. Thorax fiddle-shaped, the lateral margins denticulate; legs rufo-testaceous, differing in depth of coloring. Abdomen: the base more or less rufo-testaceous, a central narrow line of silvery pubescence runs from base to apex, a transverse fascia crosses the second segment a little within the apical margin. Length 3 lines.

Hab.—Brazil, (Para;) Mexico.

The specimens from Mexico have the central and transverse lines of pale golden pubescence.

96. **Mutilla petricola**, n. sp.

Female.—Head quadrate, wider than the thorax, finely punctured, having a thin scattered pubescence; antennæ: scape and first joint of flagellum ferru-

ginous, remaining joints piceous; mandibles ferruginous, tips black; eyes round, polished. Thorax short, closely punctured, constricted before the metathorax, which is abruptly truncate, sides deeply impressed, shining. Legs pale ferruginous, thinly clothed with shining hairs, intermediate and posterior tibiæ armed with spines, calcaria white. Abdomen ovate, basal segment fringed with golden pubescence, second segment dark chestnut-brown, having a transverse band of golden pubescence before the apical margin; remaining segments ferruginous, fringed with pale golden hairs, underside paler than above, shining. Length 3 lines.

Hab.—Mexico. Prof. F. Sumichrast.

97. **Mutilla auripes**, n. sp.

Female.—Head rounded, finely punctured, dark ferruginous, vertex and cheeks thinly clothed with fine, pale golden pubescence; antennæ: scape and first joint of flagellum ferruginous, remaining joints piceous; mandibles dark ferruginous, tips black; eyes round, prominent. Thorax coarsely reticulate, rounded in front, constricted before the metathorax, which is abruptly truncate, dark ferruginous; sides of metathorax deeply impressed, shining. Legs ferruginous, clothed with scattered glittering hairs, knees black, intermediate and posterior tibiæ armed with a row of spines; tarsi clothed with pale golden pubescence. Abdomen ovate, dark ferruginous, closely punctured, basal segment small, the apical margin on the disc clothed with golden pubescence, second segment with a fascia of golden pubescence, interrupted at the middle, apical margin black; the remaining segments fringed with golden pubescence; underside finely punctured, shining, paler than above. Length 3 lines.

Hab.—Mexico. Prof. F. Sumichrast.

98. **Mutilla minutissima**, n. sp.

Female.—Head quadrate, wider than the thorax, posterior angles acute, fuscous thinly clothed with pale glittering pubescence, face, scape of antennæ and mandibles ferruginous; eyes round, prominent. Thorax ovate, dark ferruginous, clothed with erect dark hairs, metathorax roundly truncate, sides denticulate. Legs fuscous, clothed with pale hairs, intermediate and posterior tibiæ armed with spines. Abdomen ovate, basal segment ferruginous, second segment fuscous, having on the disc a transverse, posteriorly emarginate, band of fine glittering pubescence; apical segments clothed with pale pubescence. Length 1½ line.

Hab.—Mexico. Prof. F. Sumichrast.

99. **Mutilla psammadroma**, n. sp.

Female.—Head black, somewhat wider than the thorax, quadrate, posterior angles acute, face, scape of antennæ and mandibles ferruginous, tips of the latter black; eyes large, round, prominent; vertex and posterior margin nearly black, clothed with scattered golden pile. Thorax short, sharply constricted at middle, sides crenulated, ferruginous, finely reticulated; metathorax abruptly truncate. Legs pale ferruginous, thinly clothed with glittering hairs, intermediate and posterior tibiæ armed with spines, calcaria white. Abdomen ovate, black, basal segment margined with golden pubescence, second segment with two small fuscous spots at the base, and two ovate spots, clothed with pale golden pile, near the apical margin, which is adorned in the same manner, apical segments fringed with pale golden pubescence; underside pale rufous, shining, finely punctured. Length 2½—3 lines.

Hab.—Mexico. Prof. F. Sumichrast.

100. **Mutilla simillima**, Smith, Catal. Brit. Mus. Hym. III, p. 62. No. 308.

Female.—Ferruginous; closely covered with strong elongate punctures, flagellum and tips of mandibles black, thorax narrowed posteriorly; apical margins of abdominal segments fuscous, the four apical margins fringed with cinereous pubescence; eyes round. Length 3—5 lines.

Hab.—Atlantic States.

101. **Mutilla brazoria**, n. sp.

Female.—Head subquadrate, posterior angles rounded, closely reticulated, face and cheeks black, vertex dark chestnut-brown, thinly clothed with short, erect black hairs; antennæ blackish-brown; eyes round, prominent. Thorax quadrate, coarsely reticulated, slightly constricted at middle, the disc dark ferruginous, with scattered, erect, black hairs, metathorax abruptly truncate. Legs black, clothed with scattered pale hairs, intermediate and posterior tibiæ armed with a row of spines. Abdomen ovate, basal segment reticulated, clothed with black, its apical margin fringed with bright ferruginous pubescence, second segment very finely punctured, ferruginous, densely clothed with pubescence of the same color, interspersed with silvery hairs; the remaining segments black, fringed with pale golden pubescence; underside closely punctured, lateral carinæ distinct, ventral segments fringed with mixed black and white hairs. Length 4½ lines.

Hab.—Texas. Allied to *M. Waco.*

102. **Mutilla montivaga**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 436.

Female.—Reddish; head wider than the thorax, apex of abdomen with ochraceous pubescence, eyes round. Length 4—6 lines.

Hab.—Colorado.

DESIDERATA.

The following species are unknown to me.

103. **Mutilla andreniformis**, Smith, Catal. Brit. Mus. Hym. III, p. 55. 275.

Male.—Black; densely pubescent, that on the vertex and mesothorax bright ochraceous; wings smoky-hyaline, darker about the apical margins, abdomen petiolate, petiole with a longitudinal dorsal groove, strongly punctured, shining. Length 4 lines.—(Smith.)

Hab.—Mexico.

104. **Mutilla antiguensis**, Fabr. Ent. Syst. II. p. 367. 2; Syst. Piez. p. 429. 3. Oliv. Ency. Méth. VIII. 56. 6. St. Farg. Hym. III, 601. 13.

Mutilla erythrina, Say, Bost. Jour. I. p. 297. 4.—(Smith.)

Male.—Scarlet red, black beneath, wings black-violaceous, marginal cell truncate at tip, ♀ with a black dot rather behind the middle of the tergum; eyes entire. Length 5—6 lines.—(Say.)

Hab.—Island of Antigua; Mexico.

105. **Mutilla canina**, Smith, Catal. Brit. Mus. Hym. III, p. 58. No. 283.

Female.—Rufo-testaceous; head densely clothed with pale ochraceous pubescence, anterior half of mesothorax clothed with black pubescence, posterior with pale ochraceous, basal half of second abdominal segment black, eyes round. Length 4½ lines.—(Smith.)

Hab.—Mexico.

106. **Mutilla combusta**, Smith, Catal. Brit. Mus. Hym. III, p. 59. No. 285.

Female.—Reddish-brown, head and thorax above clothed with golden pubescence, second abdominal segment having two large ovate testaceous maculæ, placed transversely a little beyond the middle. Length 4½ lines.—(Smith.)

Hab.—Mexico.

107. **Mutilla contracta**, Say, Bost. Jour. I. p. 295. 1.

Male.—Black; anterior half of first segment of the tergum black, wings blackish-fuliginous, paler about the middle, third submarginal cell contracted at base, its extreme nervure opposite to and joining the recurrent nervure, eyes ovate, emarginate. Length 5—7 lines.—(Say.)

Hab.—Western States.

108. **Mutilla dubitata**, Smith, Catal. Brit. Mus. III, p. 60. No. 295.

Female.—Ferruginous; flagellum and tips of mandibles fusco-testaceous: thorax and head closely punctured; the apical margins of abdominal segments fringed with silvery-white pubescence, eyes ovate. Length 4 lines.—(Smith.)

Hab.—Florida.

109. **Mutilla exulans**, Fabr. Ent. Syst. II. 358. 8; Syst. Piez. p. 430. 8. Oliv Ency. Méth. 56. 10.

Female.—Head and thorax black, punctured, abdomen yellowish towards the base, segments slightly punctured.—(Fabr.)

Hab.—North America.

110. **Mutilla frigida**, Smith, Catal. Brit. Mus. Hym. III, p. 60. No. 298.

Female.—Ferruginous; head subquadrate, wider than the thorax, closely punctured; thorax oblong-quadrate slightly narrowed posteriorly; the four apical segments of abdomen rufo-piceous, ciliated with cinereous hairs. Length 2 lines.—(Smith.)

Hab.—Arctic America.

111. **Mutilla Holotricha**, Sauss. Ann. Soc. Ent. France, 4th series, Vol. VII. p 361. pl. 8. fig. 11.

Female.—Rufous; clothed above with dense pale yellow pubescence. apical segments fringed with fuscous hairs. Length 4½ lines.—(Sauss.)

Hab.—Mexico.

112. **Mutilla militaris**, Smith, Catal. Brit. Mus. Hym. III, p. 61. No. 301.

Female.—Bright brick-red; the head, legs, basal segment of the abdomen, a trilobate spot at the base of second segment, an angular one on its apical margin, and also the four apical segments, black; all the black parts, except the legs, are clothed with black pubescence, on the legs and red portions it is griseous. Length 6 lines.—(Smith.)

Hab.—Jamaica.

113. **Mutilla montezumæ**, St. Farg. Hym. III, p. 634. 59.

Female.—Head black, front and vertex clothed with appressed reddish golden pubescence, thorax similarly clothed, abdomen black, segments fringed with golden pubescence. Length 4 lines.—(St. Farg.)

Hab.—Mexico.

114. **Mutilla pulchra**, Smith, Catal. Brit. Mus. Hym. III, p. 61. No. 205.

Female.—Black; head narrower than the thorax, densely clothed with bright golden pubescence, second abdominal segment has on each side at its base a large angular maeula, and towards the apical margin on each side a transverse oblong subovate maeula of reddish yellow, the three apical segments clothed with golden pubescence. Length 9 lines.—(Smith.)

Hab.—Mexico.

115. **Mutilla rubriceps**, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 111.

Female.—Dark rufous; thorax and three large spots on apex of second abdominal segment, black, the remaining segments of abdomen clothed with ochraceous pubescence. Length 6 lines.—(Cresson.)

Hab.—Cuba.

116. **Mutilla rufa**, St. Farg. Hym. III, p. 631. 54.

Male.—Head black, reddish on the vertex and behind the eyes: thorax black beneath, reddish above; abdomen ferruginous, first segment campanulate, black, second segment almost naked, wings blackish.—(St. Farg.)

Hab.—Atlantic States.

117. **Mutilla Sicheliana**, Sauss. Ann. Soc. Ent. France, 4th series, Vol. VII, p. 360. pl. 8. fig. 10.

Female.—Rufo-piceous, with cinereous pubescence, second abdominal segment dark rufous, with two ovate whitish spots. Length 5—6 lines.—(Sauss.)

Hab.—Mexico.

118. **Mutilla vagans**, Fabr. Ent. Syst. Suppl. p. 282. 27: Syst. Piez. p. 439. 50. Oliv. Ency. Méth. VIII, 66, 69.

Female.—Abdomen obscure rufous punctured, segments margined with white, legs rufous.—(Fabr.)

Hab.—North America.

119. **Mutilla versicola**, Fabr. Ent. Syst. II, 371. 20; Syst. Piez. p. 434. 30. Oliv. Ency. Méth. VIII, 63. 46.

Female.—Head, thorax and abdomen, except base and apex, rufous, apex black, fasciæ white.—(Fabr.)

Hab.—Florida.

120. **Mutilla verticalis**, Smith, Catal. Brit. Mus. Hym. III, p. 63. 311.

Female.—Black; head wider than the thorax, clothed with ferruginous pubescence, mesothorax with a broad red stripe on each side, second abdominal segment with four ovate spots, apical segments fringed with pale, glittering, yellow pubescence. Length lines.—(Smith.)

Hab.—Mexico.

121. **Mutilla vestita**, St. Farg. Hym. III, p. 634. 58.

Male.—Black; head having on the vertex a small tuft of reddish golden pubescence; wings blackish with a violet reflection. Length 8 lines.

Female.—Head black, front and vertex adorned with reddish-golden pubescence, abdomen black, apical segments clothed with reddish golden pubescence; feet black. Length 7 lines.—(St. Farg.)

Hab.—Mexico.

122. **Mutilla vigilans**, Say, Bost. Jour. I, p. 296. 3.

Male.—Black; second abdominal segment, except the anterior and posterior margins, rufous; wings purplish-black, marginal cell truncate at tip; eyes ovate, emarginate. Length 7 lines.—(Say.)

Hab.—Middle States.

AGAMA. nov. gen.

Body unicolorous, smooth and shining. Head transverse; eyes large, round and prominent; ocelli large; antennæ long and slender. Thorax narrowed posteriorly. Wings hyaline, sometimes slightly clouded, stigma prominent. Abdomen sparsely clothed with pubescence, basal segment more or less petiolate, apex ♂ furnished with two minute recurved spines. Female unknown.

The species may be tabulated as follows:

Marginal cell long, lanceolate, gradually curved to apex which is pointed.
- Body entirely black, with long pale pubescence.
  - Wings yellow, with fuscous spot on posterior margin.....1. **mendica.**
  - Wings subhyaline, with fuliginous spot on posterior margin.....2. **Orizaba.**
- Head, thorax and first abdominal segment black, with pale pubescence; mesothorax and abdomen ferruginous, with golden pubescence; anterior wing broadly fuliginuous at apex.....3. **imperialis.**
- Body black; thorax and first abdominal segment honey-yellow..4. **Nokomis.**
- Body fulvo-ferruginous or honey-yellow.
  - Abdomen with pale *yellowish* pubescence; wings faintly tinged with yellowish, anterior pair with dusky spot on anterior margin.....5. **unicolor.**
  - Abdomen with *white* pubescence.
    - Second abdominal segment coarsely punctured; anterior wing bifasciate with dusky on apical half.....6. **Danaus.**
    - Second abdominal segment smooth and shining, sparsely, finely, or not at all punctured.
      - Wings varied at apex with dusky spots; apical segments of abdomen blackish, with long white pubescence.....7. **clara.**
      - Wings hyaline, with a faint dusky spot on posterior margin of anterior pair.
        - Abdomen slender; head scarcely wider than thorax; legs pale, tips of femora blackish.....8. **melicausa.**
        - Abdomen robust; head broader than thorax; femora generally black.....9. **Tapajos.**
      - Wings hyaline, immaculate.
        - Head narrowed behind eyes, vertex rugose.....10. **triangularis.**
        - Head broad behind eyes, vertex smooth.
          - Two submarginal cells.....11. **concolor.**
          - Three submarginal cells.
            - Second abdominal segment with lateral black line or spot.....12. **pallida.**
            - Second abdominal segment immaculate.....13. **hyalina.**

Marginal cell short, not extending far beyond stigma, apex more or less abruptly rounded or truncated.

Two submarginal cells, the second receiving both recurrent nervures; apex of marginal cell rounded..... 14. **Belfragei.**

Three submarginal cells.

Second submarginal cell receiving both recurrent nervures, the third small, quadrate..... 15. **nubecula.**

Second and third submarginal cells receiving each a recurrent nervure.

Third submarginal cell narrow, transversely elongate-quadrate; color dark castaneous, with pale pubescence; antennæ and legs paler; apex of first abdominal segment nearly as broad as the base of second..... 16. **castanea.**

Third submarginal cell large, subquadrate; color pale castaneous, with pale hairs; first abdominal segment nodiform.

Large; body pale castaneous; head entirely black; posterior femora blackish..... 17. **Alcanor.**

Medium; head black, clypeus and mandibles dull honey-yellow, concolorous with body, legs paler..... 18. **glabrella.**

Fig. 1.

Fig. 2.

Fig. 3.

1. **Agama mendica,** n. sp.

Male.—Uniform brown-black, head round, densely punctured, thinly clothed with scattered, long yellowish-white hairs, eyes round, polished, prominent, mouth clothed with yellowish hairs, antennæ rufo-fuscous, as long as the head and thorax. Thorax ovate, narrowed posteriorly, closely punctured, clothed with yellowish-white hairs; sides, metathorax and scutellum reticulate, the latter finely. Tegulæ convex, polished. Wings ample, yellowish-hyaline, paler about the apex, marginal cell elongate-ovate, rounded at tip, first submarginal elongate subquadrate, pointed towards base; second short, obliquely subquadrate, its basal nervure sinuate; third obsolete; costal cell moderately wide, stigma honey-yellow, nervures yellowish; a round fuscous cloud beneath the cells. Legs blackish, thinly clothed with long pale yellowish pubescence. Abdomen elongate-ovate, basal segment campanulate, finely punctured, second segment shining, minutely and remotely punctured, sparsely clothed with yellowish-white hairs, apical margins of all the segments fringed with long coarse yellowish-white pubescence; apex armed with two long, acute, recurved spines. Length 5—6½ lines, expanse of wings 10—12 lines.

Hab.—Nevada. Coll. of Mr. Norton.

2. **Agama Orizaba,** n. sp.

Male.—Black; head round, as wide as the thorax, finely punctured, thinly clothed with erect yellowish hairs; eyes very large, round, convex; ocelli prominent; antennæ piceous, as long as the head and thorax. Thorax; pro- and mesothorax coarsely punctured, the latter with two longitudinal impressed lines on the disc, and two short ones near the tegulæ; metathorax rounded, coarsely reticulate, with three short, sharp longitudinal carinæ not extending to the middle; tegulæ round, convex, polished. Wings ample, yellowish-hya-

line, marginal cell elongate-ovate, first submarginal long and narrow, second subquadrate, pointed towards the base, receiving the first recurrent nervure before the middle, and having a faint fuscous cloud, divided by a longitudinal transparent line; a large fuscous cloud in the discoidal region; apex slightly clouded. Legs black, femora clothed with long scattered hairs, tibiæ and tarsi with yellowish pubescence. Abdomen elongate-ovate, petiolate, petiole segment one third the length of entire abdomen, shining, feebly punctured, thinly clothed with erect hairs, second segment polished, having a few very minute punctures, interspersed with scattered hairs; lateral carinæ distinct, clothed above and beneath with dense white pubescence; apical margins of the segments clothed with long yellowish pubescence. Underside polished, having a few scattered hairs. Length 6 lines, expanse of wings 10 lines. Fig. 1.

Hab.—Mexico.

3. **Agama imperialis**, n. sp.

Male.—Head black, rounded, finely punctured, thinly clothed with scattered whitish hairs, eyes round, polished, prominent; anteunæ piceous, as long as the head and thorax. Thorax ovate, dark ferruginous above, closely punctured, disc of mesothorax with two longitudinal impressed lines, scutellum blackish, finely punctured, metathorax roundly truncate, coarsely reticulate, dorsal groove not extending to the middle, sides coarsely punctured. Wings ample, basal half hyaline, apical half pale fuscous, marginal cell elongate ovate, three submarginal cells, first narrow, second obliquely subquadrate, pointed towards base, its basal and apical nervures sinuate, receiving the first recurrent before the middle, third narrowed beneath, so that its apical nervure is opposite to and joins the second recurrent. Legs black, thinly clothed with silvery hairs, calcaria reddish. Abdomen ovate, petiolate, basal segment pyriform, coarsely punctured, thinly clothed with erect silvery hairs; second and following segments brownish, finely punctured, the apical margins clothed with reddish-golden pubescence; underside same as above. Length 6 lines, expanse of wings 11 lines.

Hab.—Texas.

4. **Agama Nokomis**, n. sp.

Male.—Head black, shining, punctures very minute, and bearing a few scattered erect yellowish hairs; eyes large, round, convex; ocelli prominent; antennæ and mandibles dull rufo-fuscous, tips of the latter black. Thorax honey-yellow, shining, closely punctured, disc of mesothorax with two longitudinal impressed lines; metathorax rounded, coarsely reticulate, the disc having three short longitudinal carinæ not reaching the middle. Wings ample, hyaline, marginal cell elongate-ovate, pointed at tip, first submarginal long and narrow, second elongate subquadrate, its basal and apical nervures sinuate, receiving the recurrent nervure before the middle; stigma prominent, fuscous, its apical half within the marginal cell. Legs fusco-piceous, thinly clothed with pale hairs. Abdomen elongate-ovate, petiolate, petiole pyriform, rufo-testaceous, paler at base, closely punctured and sparsely clothed with erect hairs; second segment black, polished, finely and remotely punctured, interspersed with long scattered pale hairs; remaining segments black; apical margins ciliated with glittering yellow pubescence. Underside dark fuscous, apex armed with two minute, acute, recurved spines. Length 5 lines; expanse of wings 8 lines.

Hab.—Arizona. In some specimens the head is honey-yellow.

5. **Agama unicolor.**

Mutilla unicolor, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 389.

Male.—Pale honey-yellow, with bright yellow pubescence, wings yellowish hyaline, clouded with fuscous, eyes large, round. Length 5½—7 lines, expanse of wings 8½—11 lines.

Hab.—California.

6. **Agama Danaus**, n. sp.

Male.—Dark honey-yellow; thinly clothed with erect white hairs, head round, finely punctured: eyes round, large, prominent; antennæ fuscous Thorax elongate subquadrate, rounded in front, closely punctured, disc of mesothorax with two longitudinal impressed lines, scutellum rounded. finely reticulate; metathorax roundly truncate, coarsely reticulate. Tegulæ convex. Wings hyaline, faintly iridescent, marginal cell elongate-ovate, second submarginal obliquely subquadrate, pointed towards base, its basal nervure sinuate, receiving the recurrent nervure before the middle; nervures fuscous, a pale fuscous cloud extending from the stigma and gradually widening to the first apical cell: three faint streaks of the same at apex. Legs fuscous, paler towards the joints, femora finely punctured, thinly clothed with white hairs, calcaria pale. Abdomen ovate, petiolate, petiole coarsely reticulate, second segment closely punctured, apical segments fringed with whitish pubescence; underside same as above. Length 4½ lines, expanse of wings 7½ lines.

Hab.—Texas.

A variety has the basal segment more elongate.

This species closely resembles *A. clara*, Cresson, but may be easily distinguished by the transverse fuscous cloud in the wings, and the coarse puncturing of the abdomen.

7. **Agama clara.**

Mutilla clara, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 439.

Male.—Honey-yellow; apex of abdomen clothed with long white pubescence, wings hyaline, eyes round. Length 4 lines, expanse of wings 7¾ lines.

Hab.—Colorado.

8. **Agama melicausa**, n. sp.

Male.—Uniform dark honey-yellow: thinly clothed with erect yellowish hairs. Head rounded, shining, finely punctured, eyes large, round and prominent, as well as the ocelli; antennæ pale fuscous, except the scape, which is pale honey-yellow; tips of mandibles black. Thorax: pro- and mesothorax closely punctured, the latter with two short, feebly impressed longitudinal lines; metathorax rounded, coarsely reticulate; tegulæ ovate. Wings moderate, hyaline, marginal cell sub-lanceolate, first submarginal long, narrow and sub-parallel, second subquadrate, narrowed towards the base, its basal nervure sinuate, and receiving the first recurrent before the middle, third obsolete; stigma lanceolate, dark brown; a faint streaked fuscous cloud in the discoidal region. Legs pale yellow, except the apices of the femora and tibiæ, which are pale fuscous, thinly clothed with pale hairs. Abdomen elongate-ovate, petiolate, smooth, shining, thinly clothed with erect pale yellowish hairs, petiole as long as the second segment, moderately punctured, the latter having a few very minute scattered punctures; lateral carinæ distinct, apical margin fringed with fine, white pubescence, the remaining segments margined with long thin yellowish

hairs; ventral segments same as above. Apex armed with two long, acute, recurved spines. Length 5 lines; expanse of wings 8 lines.

Hab.—Texas. Mr. Belfrage.

9. **Agama Tapajos**, n. sp.

Male.—Uniform dark honey-yellow; thinly clothed with long whitish hairs, head subquadrate, as wide as the thorax, very finely punctured, shining, the space behind the ocelli deeply impressed, eyes large, round and prominent; antennæ brownish, pale yellow at base; tips of the mandibles black. Thorax densely punctured; mesothorax with four longitudinal, impressed lines; metathorax very coarsely reticulated, roundly truncate; tegulæ small. Wings hyaline, marginal cell elongate, rounded to tip, first submarginal long, narrow, second obliquely subquadrate, pointed towards the base, and receiving the first recurrent nervure a little before the middle, third nearly obsolete, narrowed beneath, so that its apical nervure is opposite to and joins the second recurrent; stigma nearly black, the apical half lying within the marginal cell; a faint fuscous cloud in the discoidal region, nervures fuscous. Legs thinly clothed with pale hairs, coxæ and trochanters pale yellow. Abdomen elongate-ovate, petiole closely punctured, second segment shining, very finely and remotely punctured, apical margins of the segments fringed with pale white pubescence, ventral segments same as above, apex armed with two acute, recurved spines. Length 5—5½ lines, expanse of wings 9 lines.

Hab.—Texas. Mr. Belfrage.

Closely allied to *A. clara*, Cresson, but may be distinguished by the greater length of the marginal cell, and the absence of the apical fuscous streaks in the wings.

10. **Agama triangularis**, n. sp.

Male.—Uniform dark honey-yellow; head small, subtriangular, closely punctured, eyes large, prominent; tips of mandibles black; antennæ flavo-fuscous. Thorax ovate, narrowed posteriorly, mesothorax with two longitudinal impressed lines, coarsely punctured; scutellum rounded, finely punctured; metathorax coarsely reticulate. Wings yellowish-hyaline, marginal cell ovate-lanceolate, first submarginal long and narrow, second subtriangular, its basal nervure arcuate, receiving the first recurrent near the base; stigma small, fuscous. Legs rufo-fuscous about the joints, thinly clothed with scattered pale hairs. Abdomen elongate-ovate, petiolate, basal segment subpyriform, second segment shining, minutely and remotely punctured, bearing a few scattered long pale hairs, remaining segments fringed with long pale pubescence, apex fuscous. Length 4½ lines, expanse of wings 8 lines.

Hab.—Nevada. Collection of Mr. Norton.

This species is easily recognised by the triangular head.

11. **Agama concolor.**

Mutilla concolor, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 439.

Male.—Honey-yellow; apex of abdomen clothed with whitish pubescence, wings hyaline, eyes round. Length 4½—5 lines, expanse of of wings 8—8½ lines.

Hab.—Colorado.

12. **Agama pallida**, n. sp.

Male.—Uniform pale honey-yellow; sparsely clothed with yellowish-white hairs, head rounded, feebly punctured; eyes and ocelli round, prominent, antennæ nearly as long as the head and thorax. Thorax: pro- and mesothorax finely punctured, shining, metathorax rounded, broadly reticulate, with a smooth shining space at middle; tegulæ small. Wings moderate, hyaline, marginal cell rather broadly lanceolate, first submarginal, long and narrow, second obliquely subquadrate, pointed towards the base, its basal nervure slightly sinuate, and receiving the first recurrent before the middle; third subobsolete; stigma fuscous, elongate-lanceolate, its apical half lying within the marginal cell. Legs dark honey-yellow, thinly clothed with yellowish hairs; trochanters and coxæ pale yellow. Abdomen elongate-ovate, shining, finely and remotely punctured, basal segment campanulate, second segment somewhat darker about the base; the sutural carinæ prominent; dark fuscous, apical margin of the segments thinly fringed with pale hairs; apex armed with two minute recurved spines. Length 3½ lines, expanse of wings 5 lines.

Hab.—Texas. Mr. Belfrage.

This species is closely allied to *A. unicolor*, Cresson, but may be distinguished by the absence of the thoracic lines, and the distinct fuscous lateral carinæ of the second abdominal segment.

13. **Agama hyalina**, n. sp.

Male.—Uniform honey-yellow; head subquadrate, posterior angles rounded, finely punctured: eyes large, prominent; antennæ pale honey-yellow; mandibles black at tips. Thorax elongate-quadrate, finely punctured, mesothorax with two faintly impressed longitudinal lines; metathorax roundly truncate, coarsely reticulate. Tegulæ small, pale yellow. Wings hyaline, faintly iridescent, marginal cell ovate, first sub-marginal small, narrow, second short, obliquely subquadrate, receiving the recurrent nervure near the base, stigma prominent. Legs pale honey-yellow. Abdomen ovate, narrowed to apex, shining, finely punctured, basal segment campanulate, apical margins of segments fringed with silvery pubescence; entire insect sprinkled with pale hairs. Length 2½ lines, expanse of wings 4½ lines.

Hab.—Texas. Mr. Belfrage.

14. **Agama Belfragei**, n. sp.

Male.—Uniform fuscous, shining, thinly clothed with erect whitish hairs; head rounded, as wide as the thorax, very finely punctured, eyes very large, round, prominent, as well as the ocelli; antennæ luteous, as long as the head and thorax; tips of the mandibles black. Thorax elongate, sub-parallel, rounded in front, pro- and mesothorax very finely punctured, metathorax roundly truncate, coarsely reticulated; tegulæ small, honey-yellow. Wings hyaline, faintly iridescent, having a large fuscous cloud just beyond the marginal cell, darker towards the base; marginal cell short, rounded at tip, two distinct submarginal cells, the second subtriangular, narrowed towards the base, and receiving the two recurrent nervures; stigma as long as the marginal cell, which encloses three-fourths of it, pale yellow; nervures hyaline. Legs pale yellow, except the femora which are fuscous, clothed with scattered long hairs; trochanters broadly dilated. Abdomen elongate-ovate, coarsely punctured, first or petiole segment more than one-third the length of entire abdomen, its apical half suddenly enlarged, and ovate, third segment nearly black;

segments fringed with pale hairs, the apex armed with an acute, recurved spine. Length 5¾ lines, expanse of wings 8½ lines. Fig. 2.

Hab.—Texas.

This species is closely allied to *A. nubecula*, Cresson, but is readily distinguished by having two submarginal cells, and the sudden dilation of the basal segment of the abdomen.

I respectfully dedicate this species to Mr. Belfrage, of Texas, to whom the American Entomological Society is indebted for much interesting material.

15. **Agama nubecula.**

Mutilla nubecula, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 40.

Male.—Obscure honey-yellow, thinly clothed with pale pubescence, wings hyaline, clouded beyond the stigma, eyes round. Length 3½—4 lines, expanse of wings 6—7 lines.

Hab.—Colorado.

16. **Agama castanea.**

Mutilla castanea, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 388.

Male.—Dark chestnut-brown, shining, wings yellowish-hyaline, eyes ovate. Length 6 lines, expanse of wings 10½ lines. Fig. 3.

Hab.—Lower California.

17. **Agama Alcanor**, n. sp.

Male.—Head black, rounded, wider than the thorax, very finely punctured, mandibles black, tridentate at tips, eyes very large, prominent, ocelli also large, antennæ fulvo-testaceous, more than half as long as entire insect, the joints curved, presenting a slightly scolloped appearance, when viewed laterally. Thorax chestnut-brown, elongate-subquadrate, truncate in front, disc of mesothorax sub-convex, shining, feebly and remotely punctured, with two lateral, longitudinal impressed lines, the lateral lobes finely and closely punctured, metathorax truncate, shining, the dorsal groove extending to apex. Wings pale yellowish-hyaline, nervures pale fuscous, stigma large, marginal cell short, roundly obliquely truncate at tip, three distinct submarginal cells, the first nearly as long as the stigma and marginal cell combined, dilated towards the base, second subtriangular, truncate at base, and lying entirely beneath the first; receiving the first recurrent beyond the middle. Legs castaneous, thinly clothed with pale hairs, more dense on the tibiæ and tarsi. Abdomen elongate, petiolate, chestnut-brown, shining, petiole pyriform, minutely punctured, punctures coarser about the apex, second and following segments feebly punctured, and sparsely clothed with scattered pale pubescence. Length 6 lines, expanse of wings 11 lines.

Hab.—Arizona.

This species resembles *A. castanea*, Cresson, but may be known by the greater length of antennæ, and the head being entirely black.

18. **Agama glabrella.**

Mutilla glabrella, Cresson, Proc. Ent. Soc. Phil. Vol. IV, p. 41.

Male.—Dark honey-yellow, thinly pubescent, shining, head black, wings hyaline, marginal cell short, eyes round. Length 5 lines, expanse of wings 8 lines.

Hab.—Colorado.

MYRMOSA, Latr.

1. **Myrmosa unicolor**, Say, Nar. Exped. St. Peter's River, App. p. 66.
Hab.—Pennsylvania; Missouri.

METHOCA, Latr.

1. **Methoca canadensis**, Smith, Cat. Brit. Mus. Hym. III, p. 67.
Male.—Black and shining, slightly villose, face closely punctured. Thorax coarsely punctured, with a central transversely ridged channel. Wings hyaline, faintly colored, Basal half of the first abdominal segment rugose, base of the segments depressed, their margins constricted.
Hab.—Canada.

2. **Methoca Poeyi**, Guér. Icon. Reg. Anim. Ins. p. 430, ♂ ♀.
Hab.—Cuba.

ERRATA.

Page 220, line 49, *for* pex *read* apex.
Page 201, line 44, *for* Addomen *read* Abdomen.
Page 223, line 21, *for* **coecineohirta** *read* **coccineohirta**.
Page 226, line 16, *for* **similima** *read* **simillima.**
Page 227, line 4, *for* subhexagnonal *read* subhexagonal.
Page 228, line 30, *for* eloth *read* clothed.
Page 232, line 5, *for* vate *read* ovate.
Page 235, line 43, *for* arrowed *read* narrowed.
Page 244, line 33, *for* **balopilus** *read* **Balopilas.**

Descriptions of new Species of North American Butterflies.

BY W. H. EDWARDS.

1. Anthocaris Olympia.
2. Colias Meadii.
3. Argynnis Helena.
4. Phyciodes Camillus.
5. Phyciodes Emissa.
6. Chrysophanus Sirius.
7. Thecla Ninus.
8. Thecla Autolycus.
9. Thecla Alcestis.
10. Lycæna Daunia.
11. Lycæna Alce.
12. Lycæna Lycea, Edw. ♀.
13. Lycæna Rustica, Edw. ♂.
14. Erebia Rhodia.
15. Erebia Callias.
16. Thymeticus Hylax.
17. Pamphila Draco.
18. Pamphila Licinus.
19. Pamphila Attalus.
20. Hesperia Eos.
21. Hesperia Dacotah.
22. Hesperia Horus.

Anthocaris Olympia, n. sp.

Primaries long and narrow.

Male.—Expands 1.6 inch. Upper side pure white, grey at base of wings; a large grey patch at apex of primaries, partially replaced by white; costal margin slightly specked with black; on arc a straight black bar, not prolonged above sub-costal nervure. Secondaries have a few black scales at outer angle and a small wedge-shaped black spot nearer base on costa.

Under side white; primaries have a small grey subapical patch on costa, nearly covered with green scales, and a faint greenish patch on hind margin in the discoidal interspaces; discal spot narrow, lunate enclosing a white streak. Secondaries crossed by bands of yellow green on a grey ground, the first, near base forming a segment of a circle; the second, just anterior to the middle of the wing, of irregular width, projecting a short, truncated branch on sub-median nervule that connects with the third band, and ending in a sharp spur a little inside abdominal margin; the third band, commencing on abdominal margin, is at first broad, and after connecting with second band, narrows to half its previous width, then enlarges greatly and curves towards hind margin, which it strikes in three branches, besides sending a fourth to outer angle; sometimes this last branch is disconnected and forms a marginal spot; the bands are more or less marked by small white spots and points.

Body black covered with grey hairs; beneath greenish-white; palpi white, with grey interspersed; antennæ grey above, yellowish below; club brown above, bright yellow below and at tip.

Female.—Expands 1.7 inch.

Similar to male; the grey apical patch enclosing a distinct white

spot; discal spot broader, sinuous, sending a short spur along subcostal; costal edges more irrorated; under side as in male.

From 1 ♂, 1 ♀, taken at Coalburgh, W. Va., in April, 1871, and 1 ♂, taken by Mr. Boll, at Dallas, Texas, and in collection of the Museum of Comp. Anat. Cambridge.

I was very much surprised at finding this pair at Coalburgh among a lot of *Genutia*, taken in April, 1871, by a young friend whom I had enjoined to take everything that was white. I had never before met with it, and thought that locality had been pretty well gleaned. It is also remarkblae that the next specimen should come from so remote a district as Texas. The species cannot be mistaken for any other, on account of the three bands crossing secondaries.

COLIAS MEADII, n. sp.

Male.—Expands 1.7 inch.

Upper side fiery orange, uniform in color quite to the marginal border, and with a purplish reflection; bases of wings black; abdominal margin green and yellow, much sprinkled with black; the marginal border of primaries broad, black, erose within, not much advanced on costa and projecting but a short spur on inner margin; of secondaries nearly as broad, covering the whole margin, rather wavy within; discal spots of primaries nearly wanting, indicated by a few black scales on a deeper orange ground; on disk of secondaries a deep orange spot; fringes roseate mixed with yellow.

Under side of primaries yellow-green on costal and hind margins, buff on disk; the anterior part of the wing much specked with black; discal spot yellow in a black oval; secondaries uniform yellow-green and much specked with black; discal spot silvery in a large ferruginous patch; a roseate spot at base.

Body above black covered anteriorly by roseate hairs; beneath, the thorax and abdomen greenish; legs pale roseate; palpi greenish, roseate in front; antennæ roseate; club brown tipped with fulvous.

Female.—Expands 1.9 inch.

Primaries orange, the nervules and costa and base much irrorated with black, secondaries dull orange much obscured by brown; within marginal borders a complete series of yellow spots, not wholly enclosed on secondaries; discal spot of primaries an orange streak in small black oval.

Under side less green than in male, rather greyish; disk of primaries deep orange.

This Colias is quite distinct from any known American species, excepting *Hecla*, to which it is allied.

ARGYNNIS HELENA, n. sp.

Male.—Expands 1.6 inch.

Upper side bright fulvous, but little obscured at base; marked more nearly like *Chariclea*, than any other of our species. Under side of primaries pale cinnamon or brown, except apically where the color is ochraceous, with a deep ferruginous patch on costa curving around to hind margin, interrupted partially in the lower sub-costal interspace; the spots on the disk of upper side faintly repeated, the black rounded spots nearly wanting, represented only by two or three dots on the disk; the marginal lunules obsolete.

Secondaries deep ferruginous from base to middle of wing, enclosing a transverse band formed of yellow spots separated by the ferruginous nervures; in the basal space a yellow patch at origin of submedian and of sub-costal nervures and a round spot much covered with black scales in the cell; shoulder yellow; outside the ferruginous space a narrow band of whitish lunules interrupted in middle of disk; beyond to hind margin the space is brown ferruginous at the extremities, ochraceous in the discoidal and partly so in the upper subcostal interspaces; a row of ferruginous points crosses the limb; margin edged by a series of elongated white spots forming an interrupted band, on the anterior side of which, at the extremes, are ferruginous lunules.

Body above fuscous with fulvous hairs, beneath grey fulvous; palpi fulvous; antennæ annulated fuscous and ochraceous, club black, fulvous at tip.

Female.—Same size and similar.

Taken by Mr. Mead in Colorado. In addition to the present species, Mr. Mead, also found *Arg. Freya*, *Chariclea* and *Epithore*, the two former of which were not before known as belonging to the United States.

PHYCIODES CAMILLUS, n. sp.

Male.—Expands 1.3 inch.

Upper side black, spotted with fulvous; both wings have an imperfect submarginal series of fulvous crescents, the middle one on primaries much the largest, and usually the only one distinctly visible; a second row of small fulvous spots, enlarged on secondaries and there enclosing black points; a discal row, paler, large, sub-quadrate, tortuous on primaries, nearly parallel with hind margin on secondaries;

two or three spots in cells of each wing; fringes alternate fuscous and whitish.

Under side fulvous on disk of primaries, suffused with ochraceous which is clear on costa, apex and middle of hind margin; an oblique black band on costal margin of primaries reaching from the edge to median nervure; a small black patch beyond near apex; a large one on middle of inner margin and another near inner angle, with a small spot between the two; secondaries clear yellow from base to middle of disk, very slightly reticulated with fulvous lines, one of which crosses the middle of the wing sinuously; at the end of this line on costa a ferruginous patch, and a large sub-triangular patch of same color on middle of hind margin; the margin bordered by two lines of crescents, the one in the upper median interspace yellow.

Body above concolored, beneath greyish yellow; palpi ochraceous, fuscous on upper side and at tip; antennæ annulated black and white, ochraceous below; club tipped with fulvous.

Taken in Colorado by Mr. Mead.

Phyciodes Emissa, n. sp.

Male.—Expands 1.4 inch.

Upper side black spotted with fulvous very much as in *Camillus;* the marginal crescents distinct; the second row larger, especially on secondaries; the discal row pale colored; fringes fuscous and whitish.

Under side of primaries fulvous on disk, bright yellow on costa and apex, and narrowly bordered by same shade on hind margin; this margin edged by a crenated line and a series of lunations; a patch of black near inner angle and a zigzag black stripe crossing the wing beyond the cell. Secondaries buff mottled with pale ochraceous and from base to middle of wing reticultead by ferruginous lines; the outer line deeply incised in the two upper median interspaces and dentated next abdominal margin; the space beyond this line clouded with brown and enclosing a series of brown points; the margin bordered by a series of lunules, the three next outer angle pale, nearly white, the middle one silvered, and the one anterior to it partially so.

Body above fuscous, below, thorax white; abdomen white with yellow tint; palpi white at base yellow at tip; antennæ black and white, below whitish; club black above, whitish below, fulvous at tip.

Female.—Expands 1.6 inch.

Upper side similar, the fulvous spots larger, and on secondaries nearly covering the disk. Secondaries beneath clouded with darker

brown, and a distinct whitish band across the wing; otherwise like male.

From several specimens taken in Colorado by Mr. Mead.

This species may be readily distinguished from *Camillus* by the absence of the black patches so conspicuous in that species, as well as by several characteristics noted in these descriptions.

CHRYSOPHANUS SIRIUS, n. sp.

Male.—Expands 1.3 inch.

Upper side brilliant copper-red, deepest on costal margin of primaries and both hind margins and on all the nervures, the interspaces having a brown shade when viewed directly, but fiery red otherwise; on the hind margin of secondaries the metallic border is broken into spots towards anal angle, these spots enclosing black lunules that are produced by the expansion of the black line that edges both margins; discal spot of primaries a straight fuscous bar; a fuscous point in cell; discal spot of secondaries a streak, and three or four points on disk; fringes grey-white.

Under side of primaries pale buff, of secondaries still paler; primaries have a submarginal row of rounded fuscous spots only distinct next inner angle; a bent row across the disk, rounded, nearly equal, a bar on arc, a spot and a point in cell and a spot below in median interspace; on secondaries a tortuous row of small spots or points and three points nearer base forming a line across the wing.

Body above fuscous, beneath pale buff; legs buff; palpi same; antennæ annulated black and white; club fuscous, tip ferruginous.

Female.—Same size.

Upper side fuscous, the disk of primaries pale fulvous, partly obscured by fuscous; of secondaries still more obscured; within the fuscous hind margin of primaries a deep fulvous stripe curving around inner angle; secondaries have a marginal band of black spots over which are fulvous serrations; all the spots of under side appear on upper.

Taken in Colorado by Mr. Mead.

The female is scarcely distinguishable from that of *Lyc. Heteronea.*

THECLA NINUS, n. sp.

Male.—Expands 1.1 inch.

Upper side fuscous with a slaty-blue reflection at base and on disks; tail short, black; fringes fuscous.

Under side castaneous; the disk of both wings crossed by a white band which is somewhat curved on primaries, on secondaries straight to middle of the wing, then wavy to abdominal margin; an obsolete

series of spots on hind margin of secondaries, only the posterior two quite distinct; of these, the first is black with white scales above and a black streak; the second is rounded, black, on a fulvous ground; between these and the white mesial band a series of round black spots crosses the wing.

Body above slaty-blue, beneath, grey fuscous; legs fuscous; palpi white, the last joint black; antennæ black and white; club black, tip ferruginous.

From three males taken in Colorado by Mr. Mead.

THECLA AUTOLYCUS, n. sp.

Male.—Expands 1.1 inch.

Upper side brown; primaries have a large subtriangular patch of clear ochraceous on the disk, below and back of the cell, not reaching hind margin and on inner margin obscured by brown; secondaries have a long, submarginal fulvous patch lying back of median and not quite reaching abdominal margin; between the tails a small black spot; anal angle also fulvous; secondaries have two tails, the anterior one short, both fuscous tipped with white; stigma long, oval; fringes pale fuscous, whitish next anal angle.

Under side uniform fawn color; primaries have an indistinct submarginal series of dark crescents which are edged above with white and a straight discal macular row of white spots edged anteriorly by fuscous; secondaries have the margin edged by a white line; a submarginal row of bright fulvous crescents, narrow next outer angle, broad posteriorly, all edged above with black over which is white; at anal angle a round black spot overlaid by fulvous and another black spot in the third interspace below the fulvous crescent; in the second a pale blue spot; no discal marks on either wing.

Body above concolored, beneath brownish-grey; legs grey; palpi white, black at tip; antennæ black and white; club black and white, club black, tip fulvous.

From 2 ♂, taken at Dallas, Texas, by Mr. Boll.

This species is at once distinguished by the fulvous patches on disks.

THECLA ALCESTIS, n. sp.

Female.—Expands 1.3 inch.

Upper side pale yellow-brown, immaculate; secondaries have two long tails, brown, each edged posteriorly and at tip with white; from base of the anterior tail to anal angle a whitish line borders the margin; fringes luteous.

Under side uniform drab; hind margins edged by a whitish line; both wings have a submarginal white stripe, edged by black, broken by the nervules on primaries and anterior half of secondaries, after that forming crescents as far as the submedian, ending in an oblique straight line on abdominal margin; edged marginally throughout by fulvous which is brightest on secondaries and nearly wanting on apical half of primaries; between the fulvous band and margin a clear drab space; on the second submedian interspace a round black spot, and next anal angle, a large black spot covered with pale blue scales, at angle a round black spot and fulvous stripe; both wings have also a second common white stripe nearly straight to middle of disk of secondaries, thence zigzag, edged anteriorly by black scales and a faint line of fulvous; on the disk of each wing a transverse white stripe.

Body above concolored, below white; legs white; palpi white, the last joint very long, black-edged in front and tipped with white; antennæ annulated white and black; club black, tip fulvous.

From Dallas, Texas, taken by Mr. Boll.

Lycæna Daunia, n. sp.

Male.—Expands 1.2 inch.

Upper side dull pruinose blue; both wings bordered by a broad fuscous margin, which is dentated next anal angle; fringes of primaries alternate white and fuscous, of secondaries white.

Under side grey brown, whitish on hind margin of primaries; on secondaries a white patch from base nearly fills the cell and a whitish band crosses the disk outside the mesial row of spots; primaries have a series of rather indistinct fuscous marginal lunules; a mesial row of large rounded black spots, nearly equal, each in a white ring; a reniform black spot on arc and a broad spot in cell, both edged with white; secondaries have a submarginal series of fuscous lunules, the three or four next anal angle surmounting yellowish or pale fuscous lunules; below the second and third of these are dark fuscous spots; the spots of the mesial row smaller than on primaries and less clearly edged with white; two spots transverse in cell, a third above cell and another below, the four making a curved row.

Body above fuscous covered with blue hairs, beneath grey-white palpi white, black in front; antennæ annulated black and white; club black.

Taken in Colorado by Mr Mead.

Lycæna Alce, n. sp.

Male.—Expands 1 inch.

Upper side brown with a pinkish-blue reflection, deeper blue next base; secondaries have two fuscous points in the interspace next anal angle and a round spot in the next preceding; fringes grey-white.

Under side fawn color, on the outer half of both wings reticulated with whitish; primaries have a mesial series of large black rounded spots, and a concolored spot on arc, all edged with white. Secondaries have three spots on hind margin corresponding to those of upper side, velvet-black with metallic green edges; two black spots on costa and two at base.

Body covered with blue hairs, below grey; palpi white, last joint black; antennæ annulated black and white; club black above, fulvous below and at tip.

From Colorado, taken by Mr. Mead.

LYCÆNA LYCEA.

Lycæna Lycea, Edwards, ♂, Proc. Ent. Soc. Phil. 1864.

Female.—Expands 1.4 inch. Same size as male.

Upper side fuscous, slightly blue at base of both wings; the discal spot of primaries appearing through the wing; under side fawn color, marked as in male.

Taken in Colorado by Mr. Mead.

EREBIA RHODIA, n. sp.

Male.—Expands 1.7 inch.

Upper side deep velvety-brown; primaries have a submarginal patch of bright fulvous, widening anteriorly and narrowing in the submedian interspaces, containing three black occelli, the two upper of which are joined, each enclosing a whitish pupil; the third in the second submedian interspace, smaller, without pupil. Secondaries have a submarginal row of fulvous patches, three or four in number, the posterior ones enclosing black points; fringes concolored.

Under side of primaries less velvety, the whole disk faintly tinted with fulvous; the third ocellus wanting or represented by a point; secondaries dark next base, paler at margin, the two shades divided by a wavy line that crosses the disk; the spots of upper side represented by black points only.

Body brown-black; palpi same; antennæ and club brown above, buff below, fulvous at tip.

Female.—Same size; the ocelli enlarged, and two of lesser size on primaries, making four in all, and three on secondaries, each with white pupil.

From Colorado; from several specimens taken by Mr. Mead.

Erebia Callias, n. sp.

Male.—Expands 1.5 inch.

Upper side brown with a silky gloss; on disk of primaries, covering the discoidal and upper median interspaces and extending from a little within the arc nearly to hind margin, a sub-triangular castaneous patch, which encloses a duplex black spot, in either branch of which is a white point; on secondaries three small black spots on the disk beyond cell, each in a ring of pale castaneous; fringes brown.

Under side of primaries castaneous except the costal edge and apex, which are grey; same markings as above. Secondaries grey with a brown tint, the disk crossed by a deeply crenated line, anterior to which, near base, are indistinct crenations suggesting another similar line, but nearly obsolete; near the margin three black points corresponding to those of upper side.

Body above brown, below dark grey; palpi grey; antennæ brown, luteous below; club fuscous above, yellow below at tip.

Female.—Same size.—Paler colored, similarly marked; the spots on secondaries sometimes more or less wanting.

From Colorado; from several specimens taken by Mr. Mead.

Thymeticus Hylax, n. sp.

Male.—Expands 1 inch.

Upper side clear glossy brown, immaculate; fringes fuscous; under side of primaries honey-yellow, cinereous at base and on inner margin; of secondaries yellow next abdominal margin in the whole of the two posterior interspaces; rest of wing yellow-grey; immaculate.

Body above brown, below grey; legs fulvous; palpi grey; antennæ brown above, grey below; club fuscous, brown at tip.

From Colorado; from several specimens taken by Mr. Mead.

Pamphila Draco, n. sp.

Male—Upper side fulvous on costal margin and disk, fuscous suffused with fulvous on hind margins, primaries have a yellowish subapical spot on costa, two small spots against cell near hind margin and a large one at end of and below cell; stigma narrow, double curved, velvet black at the ends, and behind it a large rounded fuscous patch.

Under side of primaries blackish at base and on inner margin, fulvous on disk and costal margin and greyish-fulvous at apex and on hind margin; spots as above; secondaries grey-fulvous, marked by a yellowish band of irregular connected spots which commences on mid-

dle of costa, bends at a right angle below apex and near the margin, and two-thirds the distance across the wing turns up the disk and runs through cell to base.

Body above black covered with greenish-fulvous hairs; beneath greenish-yellow on thorax and abdomen; palpi same; antennæ brown annulated with black above, yellowish below; club black above, yellowish below, tip fulvous.

Female.—Expands 1.3 inch.

Upper side similar to male, the spots large and the spots of underside of secondaries repeated above; under side of primaries fulvous on disk and inner margin, the costal and submarginal spots large, clear white, the discal spots yellow, diffuse; secondaries greenish with clear white spots, not connected as in male, but disposed in same way, there being a triangular spot at origin of subcostal, a large spot in cell and six along the margin.

Taken in Colorado, by Mr. Mead.

This species resembles *Napa*, and *Uncas* and also *Metea*, but may at once be distinguished from either by the black patch behind stigma.

Pamphila Licinus, n. sp.

Male.—Expands 1.35 inch.

Upper side fuscous; a large fulvous patch on disk of primaries, within which is the stigma, a long, narrow, slightly curved, fuscous bar, velvet black at the extremities; three sub-apical points on costa, two others opposite cell near hind margin and a small fulvous spot against the end of stigma, nearly connected with the discal patch. Secondaries have a large sub-triangular fulvous patch on the disk, obscured by fuscous, paler towards hind margin; fringes cinereous.

Under side brown washed with fulvous on costal margin of primaries especially next base, and somewhat sinuous on disk of secondaries; the spots on costal and hind margin repeated, white; two smaller spots at extremity of cell, the one near stigma repeated, and two larger spots of yellow-white below this and reaching inner margin. Secondaries have a row of small white spots connected so as to form a continuous line bent at right angles, terminating posteriorly at median nervure; two dots in cell.

Body above black covered with fulvous hairs; beneath grey-brown; legs same; palpi luteous; antennæ brown above, luteous below; club black, tip fulvous.

Taken by Mr. G. W. Belfrage, near Waco, Texas.

This species belongs to the group of *Uncas* and *Metea*.

Pamphila Attalus, n. sp.

Female.—Expands 1.4 inch.

Upper side fuscous, somewhat suffused with fulvous, especially noticeable when seen obliquely; primaries have three small yellow-white subapical spots on costa, a large subquadrate spot at extremity of cell, a triangular one at origin of upper branch of median, a large subquadrate below the last and a patch on submedian interspace. Secondaries have a row of indistinct yellow points and small spots, bent at a right angle so as to be nearly parallel to the costal and hind margin, terminating at median nervure; a similar point at extremity of cell; fringes cinereous.

Under side of secondaries and the costal and apical half of primaries uniform yellow-ochraceous; the rest of primaries fuscous, spots of upper side repeated, with the addition of two points near hind margin opposite the cell; secondaries have four distinct spots of equal size, one in cell, one in the upper discoidal interspace and two contiguous to each other opposite the cell.

Body above fuscous, covered with greenish hairs, beneath grey-yellow; legs and palpi same; antennæ fuscous above; luteous below; club black, tip fulvous.

From two females taken by Mr. G. W. Belfrage, near Waco, Texas.

This species differs decidely from any other known to me in the color and markings of under side. I submitted it to Mr. A. G. Butler, of the British Museum, who writes: "This is a new and undescribed species, curiously like the Australian *Trapezites Petalia*, Hewitson, in color and markings.

Hesperia Eos, n. sp.

Male.—Expands 1 inch.

Upper side grey-brown; primaries have three white points on costal margin in a line at right angles to edge; otherwise immaculate; fringes alternate white and fuscous on primaries, white on secondaries with fuscous only at tips of the three or four nervules in middle of the margin.

Under side brown with a whitish or cretaceous tint at apex of primaries and along hind margin and over most of secondaries, quite dense on hind margin; the points on primaries repeated, a little enlarged and accompanied by a fourth below the others and towards hind margin; secondaries have a mesial row of whitish points, not reaching

either margin, irregular, rather forming a double row; a similar point in cell and two in the interspace above cell.

From Dallas, Texas; taken by Mr. Boll, and in the collection of the Mus. Comp. Anat. Cambridge.

HESPERIA DACOTAH, n. sp.

Male.—Expands 1.3 inch.

Upper side bright yellow-fulvous; the hind margins pale fuscous, of equal breadth; disk of secondaries more or less obscured by fuscous; stigma straight, broad, extending from end of cell to submedian nervure; at upper extremity a dusky patch against the cell and the arc covered by a black streak; fringes long, pale fulvous. Under side of both wings ochraceous, lighter in parts corresponding to the fuscous portions of upper side; base of primaries adjoining margin dark fuscous

Body above fulvous, beneath grey-ochraceous; palpi yellow; antennæ yellow-brown tinged with fuscous; club fulvous above at tip, below brownish.

From Colorado, taken by Mr. Mead.

HESPERIA HORUS, n. sp.

Female.—Expands 1.5 inch.

Upper side brown, darkest next bases of wings, light colored on disks; immaculate, fringes long, con-colored.

Under side brown; primaries have two or three whitish dots on costal margin near apex and a few whitish scales indicating obsolete spots in the upper and middle median interspaces.

Body above con-colored, beneath greyish; palpi brownish-grey; antennæ brown above, luteous below; club black.

From Dallas, Texas; taken by Mr. Boll, and in the Museum Comp. Anat. Cambridge.

Synopsis of the Species of CORPHYRA, Say, of the United States.

BY GEORGE H. HORN, M. D.

The species of this genus have been for a long time considered as belonging to *Pedilus*, Fisch., the error having been made known by Duval, Gen. Col. Europe, IV. p. 364, note. The essential differences between *Pedilus* and *Corphyra* being in the formation of the abdomen. The former genus according to Duval having but five segments (in both sexes) of which the fourth is much the longer while the fifth is merely a narrow band. *Corphyra* has five segments in the female, the last two being nearly of equal length and somewhat longer than those which precede them; in the male there is seen a small sixth segment distinctly visible beyond the fifth, the latter being either truncate or distinctly emarginate. The name *Corphyra* was proposed by Say for species formerly placed by him in *Anthicus* and subsequently separating them under the name *Lagria* (Bost. Jour. vol. I. p. 189) remarking that the differences "seem to justify, if not the formation of a new genus, certainly a division of the present under the name of *Corphyra*."

Several new species having presented themselves and the males of several discovered not known to Leconte at the time of his Synopsis (Proc. Acad. 1855, p. 272), the opportunity is thus made use of for bringing before our students the means of recognising all our species at present known.

The males are readily known by the presence of the additional abdominal segment as above stated and by the apices of the elytra having either a yellow spot or a deep oblique impression and in several species both together. In most of the species the apical region of the male elytron is much less punctured and the space thus indicated is more convex than the rest of the elytra. When the impression occurs it is usually oblique, pointing towards the tip of the suture.

Our species are as follows:

Thorax black or dark blue.
  Elytra with oblique vitta and lateral margin pale.....**vittata.**
  Elytra entirely black or blue.
    Legs black.
      Apex of elytra ♂, with yellow space.
        Apical spot convex; last two abdominal segments of ♂ pale yellow; head and thorax smooth; two basal joints of antennæ pale.....**Newmani.**

Apical spot not more convex; last two segments black; head and thorax distinctly punctulate; antennæ entirely black.....**funebris.**
Apex of elytra of ♂ impressed but without yellow spot; two basal joints of antennæ pale; abdomen black.....**lugubris.**
Femora black, tibiæ pale. Elytra blue.....**cyanipennis.**
Legs entirely pale.....**fulvipes.**
Thorax black at middle, sides rufous.
Legs black.....**labiata.**
Legs pale.....**pulchra.**
Thorax entirely rufous.
Legs black.
Apex of elytra ♂ with yellow space.
Apex of elytra ♂ impressed.....**Lewisii.**
Apex of elytra ♂ not impressed.
Yellow spot not more convex.....**punctulata.**
Yellow spot more convex and shining.....**terminalis.**
Apex of elytra ♂ without yellow spot, but impressed.....**collaris.**
Legs pale yellow.
Thorax smooth shining.....**elegans.**
Thorax sub-opaque with distinct median line.....**canaliculata.**

C. vitatta, n. sp.—Piceous black, feebly shining. Head coarsely and rather densely punctured. Thorax orbicular, slightly narrower behind, finely punctured, and sparsely clothed with yellow pubescence. Elytra black, scabrous, with an oblique testaceous vitta extending from the humerus to apex and broader at base and the apical two-thirds of the margin also pale; surface sparsely clothed with yellow pubescence. Body beneath black, under side of thorax brownish, rather coarsely but not densely punctured. Legs black, bases of femora pale testaceous. Length .30 inch; 7.5 mm.

A single male specimen in my cabinet presents no special sexual character at the apex of the elytra. The antennæ are however strongly sub-serrate and the sixth abdominal segment distinctly visible. The species is abundantly distinct from any known to us by the characters given in the table, and those above noted.

For my unique I am indebted to Mr. Jas. Behrens, of San Francisco, California, by whom it was obtained in Amador Valley in that State.

C. Newmani, Lec. Proc. Acad. 1855, p. 271; *lugubris* ‖ Nm. Ent. Mag. V. p. 375; Lec. Journ. Acad. Ser. II. Vol. I. p. 83.—Black, shining. Head and thorax very sparsely punctured and finely clothed with short sub-erect pubescence very sparsely placed. Elytra coarsely and rather densely punctured. Beneath black, shining, sparsely punctured and clothed with paler hairs. Legs entirely black.

Male.—Antennæ very feebly sub-serrate, first and second joints pale. Tips of elytra with yellow spot, smoother and more convex than the rest of the elytra and with a distinct impression. Last two abdominal segments pale yellow.

Female.—Apices of elytra not differing from the remainder of the upper surface. Abdomen entirely black. Length .28—.30 inch; 7—7.5 mm.

Occurs in Maine and Canada.

Either sex of this species may be distinguished from the next two by the very coarsely punctured and more shining elytra. The sexual characters of the male serve for the best means of distinction.

C. lugubris, Say, Journ. Acad. Ser. I, V. p. 246; Lec. Proc. Acad. 1855, p. 273; *imus* Nm. Ent. Mag. V. p. 375; *inornata* (*Pyrochroa*) Rand. Bost. Journ. 1838, p. 23; *nigricans*, Zeig. Proc. Acad. II, p. 46.—Black, shining. Head and thorax very sparsely punctulate. Two basal joints of antennæ paler. Elytra less shining and densely punctured. Body beneath entirely black. Surface sparsely pubescent.

Male.—Antennæ feebly sub-serrate. Apices of elytra without smooth yellow space but rather deeply impressed. Length .24—.32 inch; 6—8 mm.

Not rare in the Middle States and Canada.

The male characters may be considered intermediate between the preceding and succeeding species, for while the former has a yellow space impressed and distinct, the latter having irregular yellow space not impressed, this species has an impression only without the yellow spot and greater convexity.

C. funebris, n. sp.—Black, shining. Head punctured but neither densely nor coarsely. Antennæ black. Thorax very sparsely but evenly punctulate. Elytra less shining rather coarsely and densely punctured. Body beneath and legs black, sparsely punctured. Surface sparsely clothed with brownish hairs.

Male.—Antennæ feebly sub-serrate. Tips of surface with yellow space, not more convex than the rest of the elytra, similarly punctured, and not impressed. Length .28—.32 inch; 7—8 mm.

Specimens from the neighborhood of San Francisco are not rare in cabinets. They occur according to Mr. Behrens on a Composite plant with *C. punctulata*, Lec.

As in *punctulata* the head is very distinctly punctured, and the yellow spot at the apex of the male elytron is of irregular from, the anterior margin being sinuous. The female of this species might be confounded with that of the preceding but may be known by its head and thorax being very distinctly punctulate as well as the antennæ being entirely black.

C. cyanipennis, Bland, Proc. Ent. Soc. Phil. 1854, p. 264.—Black, shining. Head almost entirely smooth, antennæ pale rufous or testaceous. Thorax very sparsely and finely punctulate and with the head sparsely clothed with pale pubescence. Elytra punctured, not coarsely nor very densely, surface with a distinct blue color and clothed with short black pubescence. Body beneath black, shining, femora black, tibiæ and tarsi pale yellow. Palpi similar in color to the antennæ. Length .28—.30 inch; 7—7.5 mm.

Male.—Apex of elytron with a deep oval impression close to the suture and rather distant from the apex.

Occurs in Virginia. May be distinguished from the other species in our fauna by the characters given in the table.

C. fulvipes, Nm. Ent. Mag. V, 375; Lec. Jour. Acad. Ser. II, Vol. I, p. 83 Black, shining. Head and thorax nearly smooth, antennæ fuscous, two basal joints paler. Elytra black with a slight tinge of glaucous blue, surface rather coarsely and densely punctured. Body beneath, finely punctured. Legs including coxæ, entirely pale yellow. Length .26—.32 inch; 6.5—8 mm.

Male.—Apex of elytra with a yellow rounded space, more convex and less punctured than the rest of the elytra, and with an elongate oval impression attaining the apex of the suture.

This species occurs, but not abundantly, in Northern New York and Canada.

C. labiata, Say, Jour. Acad. 1827, p. 247; Lec. Proc. Acad. 1855, p. 273; *infumata*, Htz. (*Pyrochroa*) Trans. Am. Phil. Soc. III, 275; *marginicollis*, Zieg. Proc. Acad. II. p. 47.—Black; feebly shining. Head sparsely punctured, labrum and anterior margin of front, yellowish. Thorax pale rufous with a broad median black space, surface very sparsely punctulate. Elytra black rather densely and coarsely punctured and sparsely clothed with short black hairs. Body beneath black distinctly punctured. Legs black, trochanters and bases of femora paler. Length .28—.30 inch; 7—7.5 mm.

Male.—Apices of elytra with rather deep oval impression closer to apical than sutural margin.

This species occurs from the Middle States, westward and in Dacota; is not rare.

C. pulchra, Lec. Jour. Acad. Sci. II, Vol. I, p. 83; Proc. Acad. 1855, p. 273.

This species has all the characters of the preceding one and is distinguished only by its pale yellowish legs. The apices of the male elytra are similarly impressed. Length .28—.32 inch; 7—8 mm.

Occurs from Ohio to Dacota.

C. Lewisii, n. sp.—Black, shining. Head very sparsely punctulate, antennæ and palpi piceous. Thorax rufous shining, finely and sparsely punctulate. Elytra black, sparsely clothed with pale pubescence, surface densely punctured, punctures slightly transversely confluent. Body beneath and legs black, sparsely pubescent and punctulate. Length .28 inch; 7 mm.

Male.—Apices of elytra with smooth, elevated, yellow space with an elongate impression parallel with the suture, The impressed space black.

The characters given in the table, abundantly distinguish this species from any other in our fauna. The female is however difficult to distinguish but may be known from all of those, with a red thorax by the much finer elytral punctuation and from *punctulata*, with which it agrees in the latter respect by the smooth head and thorax.

This species is dedicated to Dr. Samuel Lewis, as an acknowledgement of the many favors received. It was collected in Colorado.

C. punctulata, Lec. Ann. Lyc. V, 151; Proc. Acad. 1855, p. 272.—Black, shining. Head rather coarsely punctulate, antennæ black. Thorax rufous very sparsely punctulate. Elytra black rather densely punctured and sparsely

clothed with brownish hairs. Body beneath and legs black, finely punctured and sparsely pubescent. Length .28—.34 inch; 7—8.5 mm.

Male.—Antennæ distinctly serrate, apices of elytra with yellow space irregular in outline in front, scarcely more convex or more smooth than the rest of the elytra and not impressed.

In several specimens before me, the elytra are entirely rufous, less brilliant than the thorax. The apical space still remains paler.

This species occurs abundantly in many parts of California. Those from the neighborhood of San Francisco have been sent me by Mr. Jas. Behrens, who informs me that they occur with *funebris*, on flowers of various Compositæ.

C. terminalis, Say, Jour. Acad. V, p. 247; Bost. Journ. I, 189; *guttula*, New. Ent. Mag. V, 375; Lec. Proc. Acad. 1855, p. 273.—Black, shining. Head and thorax shining, the latter rufous and with very sparsely placed punctures. Elytra black, rather shining, coarsely but not very closely punctured. Body beneath and legs black and sparsely punctulate. Length .24—.30 inch; 5—7.5 mm.

Male.—Antennæ not at all sub-serrate, apices of elytra with a rounded, elevated, smooth yellow space not impressed.

This species may readily be known among those with red thorax and black legs, by its much more shining elytra, and with a very sparse pubescence. Some well preserved specimens have a slightly glaucous blue color to the elytra.

This is the most abundant species in the Middle States.

C. collaris, Say, Jour. Acad. V, p. 246, ♀; Lec. Proc. Acad. 1855, p. 271; *impressus*, Say, loc. cit. p. 248, ♂; Lec. loc. cit. 273; *marginicollis*. var. Zieg. Proc. Acad. II, p. 47; *rufithorax*, Newm. Ent. Mag. V, 375; *infumatus* ‡ Lec. Jour. Acad. Sci, II. Vol. I, p. 83.—Black; moderately shining. Head scarcely punctulate. Thorax rufous. Elytra black densely punctured, sparsely clothed with short pubescence. Body beneath and legs black, and sparsely punctulate. Length .18—.28 inch; 4.5—7 mm.

Male.—Apices of elytra, with elongate impression near the suture and attaining the apical angle.

The elytral sculpture is similar to the preceding species but the punctures are smaller and more closely placed. The females of *collaris* and *terminalis*, very closely resemble each other and can only be distinguished by the slight differences in punctuation and by the elytra of the latter being rather more shining and less pubescent. As will be seen in the synonyms above I have united *impressus*, Say, with this species. The remarks of Say, lead to the inference of their identity and I have lately seen specimens caught under circumstances admitting of but little doubt in the supposition that *impressus*, is merely the male of *Collaris*.

C. elegans, Hentz, Trans. Am. Phil. Soc. 1830, 257; *hæmorrhoidalis*, Zeig.

Proc. Acad. 1844, p. 46 ♂ : *ruficollis*, Zeig. loc. cit. p. 47.—Black, shining. Head sparsely punctulate, two basal joints of antennæ and palpi pale rufous. Thorax rufous shining. Elytra shining, coarsely and rather deeply punctured. Body beneath sparsely punctulate. Legs pale yellowish. Length .28—.32 inch; 7.8 mm.

Male.—Antennæ slender, apices of elytra with oval, smooth, yellow, convex space, vaguely impressed, last two segments of abdomen pale yellow.

Occurs in the Middle States, but is not abundant.

The female has the terminal segment of the abdomen brownish. The elytra in both sexes are frequently of a bluish tinge.

C. canaliculata, Lec. New Species, p. 143.—Piceous black, subopaque. Head sparsely punctulate, two basal joints of antennæ and palpi paler. Thorax pale rufous sub-opaque, basal margin slightly darker, surface sparsely punctulate and with a median line more deeply impressed at base, and with a small obscure fovea on each side. Elytra moderately densely punctured but less dense toward the apical margin which is paler in color gradually fading into the darker color of the rest of the surface. Beneath black, sparsely punctulate. Legs pale testaceous. Length .20 inch; 5 mm.

One female specimen alone is known to me. Collected by Mr. Fay, in Ohio. The characters given above and those in the table, abundantly distinguish it from all those which precede.

The species of Corphyra very closely resemble each other in form, for the reason no special mention has been made in the foregoing short descriptions of the forms, or relative size of the various parts of the body. The only observable variation being in the form of the thorax which in the totally black species and in *elegans* is more transverse. Those with totally red thorax, have rather more convexity while those with the median thoracic stripe are intermediate in both characters as is indicated by their position in the table. Corphyra as well as its close ally Pedilus inhabit as far as known only the northern regions of both the continents of Europe and America. The only apparent exception to the latter rule is the California species *punctulata*, which has been found as far south as Tejon, but at an altitude of over 3000 feet.

Two desiderata remain to be described, the female of *C. vittata*, and the male of *C. canaliculata*.

* Synopsis of APHODIINI of the United States.

BY GEO. H. HORN, M .D.

OXYOMUS, Castelu.

O. opacifrons, n. sp.—Oblong; piceous black, feebly shining. Head moderately convex opaque, sparsely and finely punctured; clypeus very feebly emarginate. Thorax one half broader than long, convex, sides feebly rounded hind angles nearly rectangular, base strongly rounded and without marginal line, surface coarsely punctured, more sparsely in front, and with a moderately deep sulcus at posterior portion of median line. Elytra one-half longer than wide, sides feebly rounded, surface with nine acute costal (not counting the sutural) of which the first, second, fourth, sixth and eighth are entire; intervals deeply concave and with large punctures closely placed. Body beneath and femora coarsely punctured. Length .12 inch; 3 mm.

This is the smallest *Aphodiide*, in our fauna and may be very easily known by the generic characters and the description above given.

Occurs rarely in the Middle States.

ATÆNIUS, Harold.

Our species of this genus are less numerous than those of *Aphodius*, although much more so than any of the genera which follow. Several species are widely diffused, extending their limits from extreme northern regions in our continent southwardly in all intervening territory to Buenos Ayres, and Chili. The sexes are very troublesome to distinguish and no characters are presented in *Atænius*, that will bear comparison with some of the very remarkable ones already observed in many *Aphodini*.

The following table presents all the species known to me.

Clypeus emarginate at middle, broadly rounded on each side, never dentate nor subangulate.
- Opaque species; thorax without marginal line at base.
  - Elytral interspaces flat ..... **imbricatus.**
  - Elytral interspaces elevated, alternately longer ..... **alternatus.**
- Shining species; with basal marginal line.
  - Color black or piceous.
    - Elytral interspaces flat, striæ shallow ..... **robustus.**
    - Elytral interspaces moderately or very convex.
      - Thorax evenly and densely punctured ..... **gracilis.**
      - Thorax unequally and irregularly punctured.
        - Metathorax very coarsely punctured.
          - Elytral intervals punctured ..... **oblongus.**

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* Being a continuation of paper entitled "Synopsis of the Species of APHODIUS and DIALYTES of the United States," in Trans. Am. Ent. Soc. 1870 (q. v.)

Elytral intervals smooth.....ovatulus.
Metathorax smooth.
Thorax rounded at base .....stercorator.
Thorax broadly lobed at base.....lobatus.
Color ferruginous or pale castaneous.
Elytra glabrous.
Elytral interspaces smooth shining.....socialis.
Elytral interspaces punctulate.....puncticollis.
Elytra sparsely hirsute.....hirsutus.
Clypeus deeply emarginate on each side subangulate and denticulate.
Color black or very dark.
Sides of thorax gradually rounded.
Elytra oval convex, intervals sub-costiform.....lucanus.
Elytra elongate parallel, intervals moderately convex.....abditus.
Sides of thorax distinctly sinuate at base.....cylindrus.
Color ferruginous. Elytra oblong convex.....desertus.

At. imbricatus, Mels. (*Aphodius*) Proc. Acad. 1844, 136. Lec. (*Euparia*) List. p. 37. Harold (*Hornius*) Catal. p. 1066; *sordidus*, Harold, Col. Hefte, p. V, p. 103.—Oblong, parallel, black with brownish or cinerous opaque coating, and very short pubescence. Head convex, rather densely punctured; clypeus broadly emarginate and rounded on each side; antennæ and palpi ferruginous. Thorax nearly twice as broad as long, sides (when viewed from above) feebly rounded, slightly broader in front, anterior angles rounded, base broadly rounded and without any marginal line; surface sub-rugose and sparsely punctured. Elytra sub-parallel, finely punctato-striate, interstices nearly flat but more convex at apex. Body beneath with metasternum and abdomen coarsely punctured. Legs rufo-piceous, tarsi paler. Length .16—.18 inch; 4—4.5 mm.

Western and Southern Gulf States and extending to Mexico, Cuba and Brazil.

A typical specimen sent by Sallé enables me to fix the synonymy of Harold's species definitely.

At. alternatus, Mels. (*Oxyomus*) Proc. Acad. 1844, p. 147; Lec. (*Euparia*) List. p. 57; Harold (*Hornius*) Catal. p. 1066.—Similar to the preceding in form but always darker in color and with less surface coating and not pubescent. The striæ are not punctured and the intervals acutely convex and alternately higher especially on the back, those of the sides nearly equal. Metathorax and abdomen sparsely punctured. Length .14—.18 inch; 3.5—4.5 mm.

Occurs from Pennsylvania to Florida.

At. robustus, n. sp.—Oblong of robust facies, black sub-opaque. Head moderately convex densely punctured. Thorax nearly twice as broad as long, sides feebly rounded and very slightly converging behind basal angles broadly rounded, base broadly rounded, marginal line distinct; surface densely and equally punctured. Elytra one third longer than broad, convex, sides rounded, surface striate and with feeble punctures, intervals flat and densely punctured. Body beneath shining, metasternum and abdomen sparsely punctured. Legs piceo-rufous. Length .18 inch; 4.5 mm.

A single specimen from Missouri in the cabinet of Dr. Leconte. It may easily be distinguished from any of our species by the characters given in the table.

At. oblongus, n. sp.—Oblong, parallel, black, moderately shining. Head densely punctured. Thorax one third broader than long, convex, coarsely punctured, rather sparsely on the disc more dense and sub-confluent at the sides near the hind angles; sides feebly rounded, very slightly convergent behind, base broadly rounded, hind angles obtuse. Elytra one half longer than wide, catenulato-striate, intervals convex, punctured at apex, the inner three on each elytron entire. Metasternum and abdomen, the latter especially, coarsely punctured. Legs black, femora coarsely punctured, tarsi piceous. Length .24 inch; 6 mm.

This species is especially remarkable for the very coarse punctuation of the abdomen.

One specimen in the cabinet of Dr. Leconte from California, without more specific designation of locality.

At. gracilis, Mels. (*Oxyomus*) Proc. Acad. 1844, p. 137; Lec. (*Euparia*) List. p. 36; Harold (*Atœnius*) Catal. p. 1066.

This species is so widely diffused and so well known that is appears to me unnecessary to add anything to the characters given in the table. The surface of the thorax in the large majority of specimens is rather densely punctured, the punctures being of nearly equal size and very evenly distributed, on the sides scacely more dense than on the disc.

It may readily be known by its slender form from all the species with a similarly formed clypeus. Length .12—.16 inch; 3—4 mm.

This species occurs on the entire American Continent wherever *Aphodiini* occur.

A. ovatulus, (Harold, MSS.)—Black, shining, elongate oval. Head moderately convex, punctured, more densely and coarsely on the occiput and sides. Thorax convex sides feebly rounded and slightly narrower behind, one half broader than long, base broadly rounded, surface unequally punctured, disc sparsely, sides and base more coarsely and densely. Elytra sub-oval, convex, deeply striate intervals convex and not punctured. Metasternum and abdomen moderately punctured. Legs rufo-piceous. Length .14 inch; 3.5 mm.

A very distinct species by the characters enumerated briefly above. The name under which it was sent us by Sallé is preserved.

Occurs from Pennsylvania to Louisiana.

At. stercorator, Fab. (*Aphodius*) Spec. Ins. I, p. 22; Syst. Eleut. I, p. 81; Oliv. Ent. I, 3, p. 89, tab. 17, fig. 155; Harold, (*Atœnius*) Cat. p. 1067: *cognata*, Lec. (*Euparia*) Proc. Acad. 1858, p. 65. *strigatus*, Say, (*Aphodius*) Journ. Acad. 1848, p. 106.

This species is also one of those having a wide distribution. It occurs in all parts of our fauna and extends through Mexico and the

West Indies to South America, as far as Chili and Buenos Ayres. Typical specimens have been sent me through the kindness of Dr. Candeze, from the Pampas of the latter country where they appear to be as abundant as in our own regions.

It is our largest species and may readily be known by its shining black color, deeply striate and crenately punctured elytra with intervals at least moderately, sometimes very, convex and smooth. The thorax is doubly punctured, that is, there are fine punctures, moderately, densely placed and much coarser and deeper punctures irregularly disposed but much more abundant at the sides and base than on the disc and in front. The thorax varies somewhat in shape being apparently broader in front in the specimens known as "*stercorator*" in our cabinets and moderately rounded and apparently narrowed in front in the types from Candeze and in *cognatus*, Lec; *strigatus*, is in all respects intermediate, in fact the variation here is no greater, if as great as in *Aphodius granarius*, which appears to exhibit slight variations in each locality when varied conditions of habitat are found. Length .16—.24 inch; 4—6 mm.

At. lobatus, n. sp.—Piceous black or brownish, shining. Head moderately convex sparsely punctured and transversely strigose in front. Thorax moderately convex, one third broader than long, sides rounded, base broadly lobed at middle; surface with sparsely placed fine punctures and very coarse, deep punctures at the sides and base not densely placed. Elytra oblong, broader behind the middle, very obtuse at apex; surface deeply striate, striæ punctured, intervals very convex, smooth. Body beneath nearly smooth, legs castaneous. Length .22 inch; 5.5 mm.

This species may readily be known from *stercorator*, by its brown color. As compared with the latter species the thorax is shorter the sides more rounded and the base more distinctly lobed. The coarse punctures of the thorax are much fewer and never densely placed. The punctures of the striæ are smaller never so closely placed and have a tendency to become evanescent. The elytra in *stercorator*, are parallel in the present species rounded on the sides broader behind the middle and more convex both transversely and longitudinally.

Occurs rather abundantly in the Peninsula of Lower California.

At. socialis, n. sp. (Harold & Chevr. mss.)—Oblong, subparallel, shining, ferruginous with occiput, disc of thorax, suture and apex of elytra darker. Head moderately convex, sparsely punctured. Thorax one fourth broader than long, sides feebly rounded; surface sparsely punctured, punctures coarser at the sides and base. Elytra twice as long as broad, parallel, striate, striæ feebly punctured, intervals moderately convex and smooth. Body beneath smooth shining, similar in color to the upper surface. Length .18—.20 inch; 4.5—5 mm.

This species is very easily known by its color smooth elytral interspaces without pubescence.

Occurs in Georgia and Louisiana. I preserve the name under which it has been distributed by Chevrolat and which appears to have been adopted by Harold.

At. puncticollis, Lec. (*Euparia*) Proc. Acad. 1858, p. 66; Harold (*Atanius*) Catal. p. 1067,—Oblong, ferruginous, feebly shining. Head sparsely punctured anteriorly sub-rugose. Thorax one fourth broader than long, sides feebly rounded and very slightly narrower behind; surface rather densely punctured, punctures nearly equal in size and very evenly distributed. Elytra subparallel moderately striate, striæ impunctured intervals nearly flat biseriately punctured. Body beneath rather darker and sparsely punctured. Length .16 inch; 4 mm.

The length given by Leconte ".4 inch" is an accidental error meaning evidently mm.

One specimen from El Paso, Texas.

At. hirsutus, n. sp.—Oblong, ferruginous brown, subparallel, feebly shining. Head moderately convex, sparsely punctured, rugulose anteriorly. Thorax one third broader than long, convex sparsely punctured with coarse and fine punctures intermixed; sides moderately, base broadly rounded Elytra nearly twice as long as wide, sides feebly rounded, deeply striate and with coarse punctures; interspaces convex, finely biseriately punctulate each puncture with a short yellowish ereet hair. Body beneath sparsely punctured, legs paler. Length .16—.18 inch; 4—4.5 mm.

The punctuation of the thorax in this species resembles that of *stercorator* but the coarser punctures are larger and more evenly diffused over the surface. The base of thorax is more rounded than usual in the other species but less so than in *lobatus*. Its color seems hardly to warrant its being placed in association with the two preceding species but the characters above given will enable it to be readily known whether placed near *lobatus* or in its present position.

Two dead and mutilated specimens from Camp Grant, Arizona.

The species which follow are known from all the others in our fauna by the form of the clypeus which is deeply emarginate, subangulate on each side of the emargination and usually with a small tooth at the angulation formed by the upturned edge of the clypeus and at times scarcely seen except by a view in front.

At. lucanus, n. sp.—Oblong, dark brown, shining. Head moderately convex sparsely punctured, anteriorly scarcely rugulose. Thorax moderately convex, sides feebly rounded and slightly narrower in front; surface coarsely but not densely punctured, punctures somewhat finer anteriorly and very evenly disposed. Elytra oblong oval, one third longer than wide, wider behind the middle. Surface deeply striate, striæ at bottom impunctured; intervals very convex and on each side below the apex a row of moderately coarse punctures

Mesosternum, abdomen and femora coarsely but sparsely punctured. Length .16 inch; 4 mm.

One specimen from Cape San Lucas, Lower California.

At. abditus, Hald. (*Aphodius*) Journ. Acad. 1848, p. 106; Lee, (*Euparia*) List. p. 36; Harold (*Atœnius*) Catal. p. 1066.—Elongate, parallel, black, shining. Head moderately convex sparsely punctured and in front rugulose. Thorax moderately convex, rather densely and coarsely punctured, at the sides becoming confluent: sides feebly rounded and at base narrowed; hind angles broadly rounded. Elytra nearly twice as long as broad, deeply striate, striæ punctured, intervals nearly flat usually biseriately punctulate. Metasternum and abdomen sparsely punctured, femora nearly smooth. Length .14 inch; 3.5 mm.

Occurs from the Atlantic to the Pacific coast.

At. cylindrus, n. sp. *Oxyomus cylindrus*, Dej. Catal.

This species is closely allied to the preceding but differs by the following characters.

Sides of thorax moderately rounded, scarcely narrower behind and distinctly sinuate at the hind angles; surface rather densely and evenly punctured, with punctures not confluent at the sides. Elytra oblong, sides moderately rounded; surface deeply catenulato-striate, intervals very convex and distantly unseriately punctulate. Body beneath and femora sparsely punctured. Length .16 inch; 4 mm.

Resembles *ovatulus*, in general aspect but differs in the form of front and by the situation of the hind angles.

Occurs in South Carolina, Georgia and Florida.

At. desertus, n. sp.—Ferruginous or pale castaneous, oblong oval, shining. Head sparsely punctured at occiput, vertex and front rugulose. Thorax one half broader than long, moderately convex, sparsely and unequally punctured, coarser punctures very sparsely placed but more numerous at the sides; sides feebly rounded and slightly narrower in front. Elytra moderately rounded on the sides, slightly broader behind the middle, deeply striate, striæ coarsely punctured, intervals moderately convex, smooth. Body beneath very sparsely punctured, femora smooth. Length .16—.18 inch; 4—4.5 mm.

Not rare in the desert regions around and to the eastward of Fort Yuma, California

In some of the larger specimens the elytral intervals are very finely biseriately punctulate.

EUPARIA, Lepellet.

E. castanea, Lep. Ency. Method. X, p. 357; Westwood, Trans. Ent. Soc. IV, 4, 1847, p. 239, pl. 17, fig. 3.—Piceous black, shining. Head very broad, sparsely punctured; clypeus feebly emarginate and on each side a moderately deep incisure, lateral angles acute. Thorax twice as broad as long, slightly broader in front, sides margined strongly explanate in front; anterior angles very broad, hind angles obtuse, base at middle broadly lobed; surface sparsely muricately punctured, each puncture, with a short yellowish hair. Elytra par-

allel, narrower than thorax, one third longer than wide, at base deeply emarginate, angles very prominent anteriorly; sides nearly straight, slightly sinuate near the humeri; surface feebly striate, striæ punctured, intervals flat, biseriately punctulate and each puncture with an erect hair. Body beneath very sparsely punctured. Length .20—.22 inch; 4—4.5 mm.

Occurs in the Gulf States, usually with ants.

RHYSSEMUS, Muls.

Three species are known to me in our fauna. The genus may be easily known by the characters given in the table from all excepting possibly *Psammodius*. In *Rhyssemus*, the hind tarsal joints are flattened and subtriangular as in *Psammodius*. The latter has the margin of thorax fimbriate but with slender hairs, and in the present genus they are clavate. The hind femora in *Rhyssemus*, are more slender than those of the first pair, and the spurs slender and acute while the reverse is the case in *Psammodius*. In the latter genus the transverse elevations are smooth and the grooves punctured in *Rhyssemus*, the former are made of larger tubercles while smaller ones fill the interspaces. These characters will serve to distinguish the two genera without recourse to that derived from the external maxillary lobe which although more to be depended on is difficult to observe without dissection.

Rh. scaber, Hald. Journ. Acad. 1848, p 107.—Black; subopaque. Head coarsely verrucose, clypeus emarginate and on each side obtusely rounded, behind the emargination depressed, margin of head rufous. Thorax moderately convex, with four transverse elevated ridges interrupted at middle and, smoother, intervals with rather fine granules, more opaque than the ridges. Elytra oblong sides moderately rounded, striate, striæ not punctured, intervals with an acute elevated ridge sub-serrate at apex and a line of elongated tubercles. Body beneath shining, sparsely punctured, legs rufo-piceous. Length .14—.16 inch; 3.5—4 mm.

Occurs in wet places along the Atlantic region.

Rh. californicus, n. sp.—Black opaque. Head sparsely verrucose, clypeus emarginate and on each side distinctly sub-angulate. Thorax one fourth longer than wide and distinctly narrowed at base, sides (viewed laterally) nearly straight, disc convex, and with four very indistinct transverse ridges interrupted at middle, and a distinct impression at each anterior angle, surface with moderately fine granules. Elytra oblong, subparallel, striate, striæ punctured, intervals flat distinctly biseriately tuberculate. Body beneath more shining sparsely punctured. Legs rufo-piceous. Length .12—.16 inch; 3—4 mm.

Occurs in sandy places on the margins of streams near Visalia, Cal.

Easily known from *scaber*, by the very indistinct thoracic elevations by the elytral sculpture and the pure blackness and opacity of surface.

Rh. riparius, n. sp.—Brown opaque. Head rather coarsely verrucose, vertex with two short elevated ridges converging above without joining, clypeus emar-

ginate and on each side distinctly subangulate. Thorax slightly broader than long, broadest at middle, sides short, viewed laterally slightly sinuate; hind angles and base broadly rounded; surface rather coarsely verrucose, and with three transverse grooves, the posterior two interrupted at middle. Elytra oblong, sides moderately rounded, striæ deep with coarse punctures, intervals flat, finely biseriately granulate. Body beneath subopaque and slightly rugose Length .12 inch; 3 mm.

The transverse grooves of the thorax although less distinct than in *scaber* are more so than in *californicus*. The anterior groove is shallow but entire, the second close to the first and visible only at middle, the third is interrupted at middle and much the deepest and most distinct, the fourth is very faint. The elytral intervals are very distinctly biseriately tuberculate at basal half but the arrangement becomes confused near the apex. The granules of the thorax are all distinct moderately distant from each other and proportionately larger than in either of the preceding species.

One specimen in my cabinet, from under chips at the margin of San Pedro River, Arizona.

PLEUROPHORUS, Muls.

P. cæsus, Panz. (*Scarabæus*) Faun. Germ. 35, 2; Fab. (*Aphodius*) Syst. El. 1, p. 82; Muls. (*Pleurophorus*) Col. Fr. Lamell. p. 312; Harold (*Psammodius*) Catal. p. 1068.—Elongate, subparallel, feebly convex, black, shining. Head moderately convex, nearly rounded or very feebly emarginate in front, surface shining covered with convex verrucæ. Thorax slightly broader than long; sides feebly rounded; surface with large punctures very widely and irregularly scattered and with two transverse shallow grooves visible only at the sides, the anterior being the deeper, and longitudinally broadly canaliculate at posterior portion of median line. Elytra sub-crenulately striate, intervals moderately convex smooth. Length .12 inch; 3 mm.

Several specimens collected in the Middle States are referred to this species. They resemble in general appearance *Atænius gracilis*, but may readily be known by the verrucose head and the transverse sulci of the thorax. The tarsal claws are moderate and the first joint of hind tarsus longer than the longest spur. The genus seems as worthy of adoption as distinct from *Psammodius*, as do *Oxyomus* and *Dialytes* from *Aphodius*.

PSAMMODIUS, Gyll.

Five species in our fauna distinguished as follows:

Clypeus emarginate rounded or subangulate on each side.
  Transverse ridges distinct.
    Four discal ridges; color piceous ..... **ægialioides.**
    Five discal ridges; color ferruginous ..... **quinqueplicatus.**
  Transverse ridges very indistinct obliterated at middle.
    Three ridges; color piceous.

Elytra cylindrical.....interruptus.
Elytra inflated, broadly oval.....cælatus.
Clypeus with a distinct tooth on each side. Thorax without ridges.....bidens.

Ps. ægialioides, Hald. Journ. Acad. 1848, p. 107.—Oblong oval, piceous, shining, elytra slightly paler. Head coarsely verrucose, clypeus emarginate, margins slightly reflexed and rufous. Thorax nearly twice as broad as long, broadest at middle, sides rounded; disc with four elevated transverse ridges, smooth, the hinder two interrupted by a longitudinal groove, intervals between the grooves very coarsely punctured. Elytra gradually wider behind, deeply striate and punctured, intervals convex smooth. Body beneath piceous, sides of metasternum coarsely punctured, abdomen nearly smooth: legs brownish femora sparsely punctured. Length .16 inch; 4 mm.

Middle and Southern States, not common.

Ps. quinqueplicatus, n. sp.—Oblong oval, ferruginous, shining. Head verrucose in front, occiput smoother, clypeus rather deeply and acutely emarginate, margin slightly reflexed. Thorax one half broader than long, sides moderately rounded, disc with five transverse ridges indistinctly marked, the hinder three interrupted at middle, smooth at tip, intervals very coarsely punctured. Elytra oval broader behind, striæ moderately deep crenately punctured, intervals moderately convex, impunctured. Body beneath ferruginous, abdomen with a few coarse punctures. Length .14 inch; 3.5 mm.

This species is easily known from the preceding by its much paler color, more indistinct thoracic ridges, more deeply emarginate clypeus and more robust form. The hind tibiæ are much less muricate.

Two specimens collected by Major Webb, of the U. S. and Mex. Boundary Survey probably in Arizona, or Western Texas.

Ps. interruptus, Say, Bost. Journ. I, p. 178.—Piceous, elytra paler, moderately shining. Head verrucose, clypeus deeply emarginate, margins rufous and slightly reflexed. Thorax nearly twice as broad as long, broadest behind the middle, surface with three very indistinct transverse elevations which are sparsely punctured intervals coarsely punctured. Elytra oblong not broader behind, striæ moderately deep catenulate, intervals flat with a series of punctures. Body beneath somewhat paler in color than the upper surface, abdomen with a few coarse punctures. Legs brownish, middle and hind femora with a marginal line behind and a few coarse punctures arranged in line near the apex. Length .13 inch; 3.25 mm.

One specimen from the Middle States, is referred to the species. It is more parallel and cylindrical than any other in our fauna.

Ps. cælatus, Lec. (*Ægialia*) Pacif. R. R. Rep. 1857. App. I, p. 42.—Oval convex, piceous shining. Head verrucose, clypeus emarginate obtusely rounded each side. Thorax twice as broad as long, sides moderately rounded above with three indistinct transverse ridges interrupted at middle, smooth; intervals coarsely punctured, that between the second and last ridges deeper. Elytra broadly oval very convex, scarcely one fourth longer than broad; striate, striæ punctured, intervals nearly flat impunctured. Body beneath piceous, abdomen with few punctures; legs ferruginous, hind tibiæ stout. Length .13 inch; 3.25 mm.

Abundant on the sea coast near San Francisco, California.

This species was placed in *Ægialia*, by Leconte, but the mandibles are entirely concealed beneath the clypeus. It may readily be known from all our species by its strongly inflated elytra. The body is apterous.

Ps. bidens, n. sp.—Oblong oval, piceous moderately shining. Head verrucose, clypeus emarginate and on each side with an acute vertical tooth Thorax one half broader than long, sides moderately rounded, surface nearly smooth and with very few moderate punctures near the base and a short transverse impression at the anterior angle punctured at bottom. Elytra striate, striæ punctured intervals very feebly convex and smooth. Abdomen with few punctures; legs brownish; tibiæ stout. Length .14 inch; 3.5 mm.

This species is abundantly distinguished by the bidentate clypeus and the total obliteration of the transverse ridges of the thorax, the only trace of this sculpture remaining is the very short groove near the anterior angles.

Two specimens from the Southern States, probably Georgia.

Aphodius clypeatus, Say, Long's Exped. II, p. 277.—Which is at present unknown to us appears to belong rather to the present genus than *Ægialia*.

ÆGIALIA, Latr.

Our species are but four and may be distinguished in the following manner.

Spurs of hind tibiæ slender acute at tip.
- Intervals of elytra punctured ..... **cylindrica.**
- Intervals smooth, impunctured ..... **lacustris.**

Spurs of hind tibiæ (inner especially) thin and very broad ..... **conferta.**

Spurs of hind tibiæ obtuse, but not explanate ..... **crassa.**

Æ. cylindrica, Esch. (*Psammodius*) Entomog. I, p. 11; Mann. (*Oxyomus*) Bull. Mosc. 1843, II, p. 262; *id*, (*Ægialia*) 1853, III, p. 220.—Piceous black, moderately shining, oblong. Head very coarsely and sub-confluently punctured, clypeus very broadly emarginate. Thorax broader than long, slightly broader behind, sides moderately rounded margins crenulate; surface coarsely but regularly punctured and with a slight median impression behind. Elytra oblong, striate, striæ punctured, intervals feebly convex biseriately punctulate. Legs piceo-rufous, hind tibiæ moderately stout terminated by slender spurs. Length .20 inch; 5 mm.

Typical specimens are before me from Mannerheim, collected in Alaska. It may be known from all our species by the punctulate elytral intervals and rather strongly crenulate margin of thorax.

Æ. lacustris, Lec. Agass. Lake Superior, p. 225.—Oblong, black, moderately shining. Head coarsely punctured at vertex, verrucose in front; clypeus emarginate. Thorax one third broader than long, sides moderately rounded, surface coarsely punctured, more sparsely in front and with a shallow broad impression near each anterior angle. Elytra oblong, oval, somewhat broader behind, surface deeply striate, striæ punctured, intervals convex, smooth. Hind tibiæ rather slender, with slender spurs. Length .18—.22 inch; 4.5—5.5 mm.

This is our largest species and is more deeply striate than any other in our fauna.

Collected in the Lake Superior region.

Æ. crassa,, Lec. Pacif. R. R. Rept. App. I, p.—Black, shining, form robust, elongate oval. Head entirely verrueose, clypeus feebly emarginate. Thorax short, more than twice as wide as long, sides rounded narrowing to the front, surface with coarse punctures at middle basal region, smoother and less punctured at the sides and anteriorly and with a shallow impression at the hind angles. Elytra very convex, one half longer than wide, striæ not deep, moderately and rather distantly punctured; intervals flat impunctured. Hind tibiæ stout, spurs moderately thick, curved, and obtuse at apex. Length .16—.18 inch; 4—4.5 mm.

Occurs rather abundantly on the sea coast south of San Francisco, California.

Æ. conferta, n. sp.—Oblong, black, shining. Head rather densely verrueose, clypeus feebly emarginate. Thorax one half broader than long, sides rounded and narrowed in front, surface, coarsely punctured on the disc at the sides smoother, with a rounded impression and a slight transverse impression near the anterior angles. Elytra broader behind the middle, deeply striate, striæ punctured; intervals convex smooth. Legs piceo-rufous, hind tibiæ stout, spurs broad, leaflike at the apical half, hind femora with an entire sub-marginal row of setigerous punctures Length .14—.18 inch; 3.5—4.5 mm.

This species is similar in form and appearance to *lacustris*, but may easily be known especially by the form of the hinder tibial spurs.

Occurs rarely in the Middle and Southern States and in Illinois.

Having thus far disposed of all the species known to me as inhabiting our fauna the following table and remarks are presented as affording ready means of determining the genera.

Mandibles visible beyond the clypeus.....**Ægialia.**
Mandibles entirely concealed beneath the clypeus.
  Hind tarsi with triangular joints.....**Psammodius.**
  Hind tarsi with elongate joints, usually cylindrical.
    Head asperato-granulate or verrucose.
      Thorax not fimbriate; grooves short lateral.....**Pleurophorus.**
      Thorax with scale like marginal hairs; grooves entire.....**Rhyssemus.**
    Head punctured or slightly plicate.
      Thorax broader at base than elytra, hind tibiæ spiniform at apex.....**Euparia.**
      Thorax never broader than elytra.
        Outer apical angle prolonged spiniform.....**Atænius.**
        Outer apical angle of hind tibiæ obtuse.
          Anterior tibiæ with upper teeth obsolete, the terminal tooth anterior.....**Dialytes.**
          Anterior tibiæ strongly toothed, teeth external.
            Elytra with costiform intervals.....**Oxyomus.**
            Elytra simply striate.....**Aphodius.**

The first three genera have the maxillæ corneous and with a hook

at extremity; in the remaining genera the maxillæ are entirely membranous.

Euparia and *Atœnius* have the hinder tibiæ deprived of transverse ridges and are closely allied. The former have the middle and hind tibiæ arcuate, convex inwardly, while in the latter the tibiæ are nearly straight. *Euparia* has the sides of the thorax, especially in front, explanate, and broader than the elytra.

In the last three genera the eyes are partly visible when the head is deflexed and almost entirely concealed in all the rest of the genera.

Dialytes alone has the head perfectly vertical in repose, in all the other genera the head is oblique.

The following new species have been discovered since the publication of the first part of this paper.

Aphodius ochreipennis, n. sp.—Black, shining, elytra and legs ochreous. Head black very minutely punctulate and bordered anteriorly with rufous; clypeus feebly emarginate at middle, broadly rounded on each side. Thorax moderately convex, nearly twice as broad as long, sides moderately rounded slightly explanate at hind angle which is broadly rounded; surface sparsely and very finely punctulate at middle, coarsely toward the sides densely and more finely along the margin and in the concavity near the hind angles; base broadly rounded and without marginal line. Elytra ochreous broader behind middle moderately convex, finely striate, striæ finely punctured, intervals flat, punctulate. Body beneath black, sparsely clothed with yellowish hairs. Tibiæ fimbriate with unequal spinules. Length .26 inch; 6.5 mm.

One ♀ specimen from Owen's Valley, California.

By the characters above given it will be seen that this species should be placed in Group L. of *Aphodius* near *politus* with which it agrees in the absence of the basal marginal line and in the concavity near the hind angle caused by the margin being distinctly explanate.

A. rugifrons, n. sp.—Oblong, black shining, elytra black with small paler markings. Head deeply and rugosely punctured; clypeus emarginate at middle, on each side, an acute vertical tooth and externally distinctly angulate; genæ obtusely rounded not prominent. Thorax moderately convex, one-third broader than long, sides very feebly rounded, basal marginal line very indistinct; surface with moderate punctures closely placed and evenly disposed. Elytra with feebly rounded sides, black with suture and apical margins testaceous, and two subhumeral linear spots and a V shaped spot at three fourths of the same color; surface striate, striæ punctured intervals very feebly convex sparsely punctulate. Body beneath piceous, femora yellowish, tibiæ darker. Mesosternum not carinate, very sparsely punctured; tibiæ fringed with short equal spinules. Length .15 inch; 3.75 mm.

This species should form a type of a group by itself near Group G. characterised by the strong angulation of the clypeus on each side of the tooth and the not carinate mesosternum. The head is unusually

roughly sculptured resembling rather an *Ægialia*, but not verrucose, the punctures being very coarse and deep and somewhat confluent. The thorax is totally black, the elytra brownish-piceous with pale patches as follows; sutural interval, apical margin extending by a narrow band half way to humerus, a very small patch on each side of scutellum, a small humeral spot at base of fifth and sixth intervals, a small linear spot on the fourth interval behind the preceding and a small V-like spot on the third and fourth intervals at about one-fourth from the apex. The markings resemble those of *congregatus* but each portion smaller. The hind tibiæ are moderately stout. Hind tarsi with first joint shorter than longer spur and not equal to the two following joints together.

In general aspect the species resembles a small dark colored variety of *pardalis* in which I had placed it previous to the present review and having been recognised as distinct was so carefully placed away as to have been practically lost at the time the *Aphodius* portion was written.

One specimen in my cabinet from California.

In the preceding portion of this paper numerous errors have been allowed to pass unnoticed some of them of trifling moment others serious. All are the result of not revising the proof after the first correction by the printer. Trans. Ent. Soc. 1870.

ERRATA.

Page 110 line before last, for speics, read species.
" 111 " 6 for Teuchestus read Teuchestes.
" 112 " 10 for insterpaces read interspaces.
" 112 " 18 after occidentalis add n. sp.
" 112 " 33 for unconspicuous read inconspicuous.
" 112 " 42 after longer and add than broad.
" 114 " 23 for uniformily read uniformly.
" 114 " 6 from bottom for rather read rarely.
" 118 " 14 for fonnd read found.
" 119 " 19 for trituuberculate read trituberculate.
" 119 " 20 for prosteriorly read posteriorly.
" 119 " 25 for testaceus read testaceous.
" 121 " 20 for intinctly read distinctly.
" 124 " 3 after *inquinatus* read but larger and.
" 124 " 13 for foward read forward.
" 124 " 24 for thier read their.
" 125 " in the description of stupidus read, Elytra moderately convex, sides subparallel, surface moderately striate with scarcely any traces at apex, striæ punctured; intervals flat, rugose and muricate becoming smoother toward this apices of the elytra.

In the proof sheet one entire line of MSS., was omitted and also all the interlined emendations.

Page 126 lines 7 and 8, omit striæ and all the words after it. A longer series shows this character to be fallacious.

Page 126 line 9 from bottom for testoceous read testaceous.

" 127 " 14 omit distinctly,

" 128 " 17 after ferruginous add, Head smooth, clypeus feebly emarginate at middle.

Page 130 last line, omit at base.

" 131 next to last line omit by and add a comma.

" 131 last line read comparatively and omit comma.

" 132 line 10 for wiihin read within.

" 133 " 15 for margined read marginal.

Remarks on the Species of the Genus ISOMALUS Er. of the United States.

BY GEO. H. HORN, M. D.

In a pamphlet entitled "Notices Entomologiques." Mr. Albert Fauvel in an article entitled "Etudes sur les staphylinides de l'Amerique Centrale, principalement de Mexique," publishes an account of the species of *Isomalus*, of that region. As our own species are rather rare and it being impossible for me to furnish him with the necessary material for his systematic catalogue of the Staphylinidæ in general, I have thought it proper to review our four species and point out some variations exhibited by them from the present descriptions of the genus.

In the work above cited Fauvel makes the following remarks: "The species of *Isomalus* are remarkable for their extremely flattened form, indicating a priori their habit of living under bark and in the trunks of decayed trees. They are distinguished from the other Piestini by the following characters; body glabrous, smooth; head with lateral longitudinal groove; front mutic; mandibles prominent mutic; maxillary palpi with last joint somewhat shorter than the preceding; thorax not grooved, broadly sinuate behind; elytra without sutural striæ; legs mutic; abdomen strongly margined."

Our species all agree in being very much depressed, smooth and shining; thorax strongly narrowed at base and not longer than the head.

Two have a distinct sutural stria.....**nigrellus**, Lec. and **canadensis**, n. sp.
Two have no sutural stria.. .....**pallidus**, Lec. and **fasciatus**, Lec.

By means of the groove at the side of the head they may be tabulated in the following manner;

Lateral groove above the eyes and extending slightly behind

them.....fasciatus.
Lateral groove behind the eyes only, limited exteriorly by a slight ridge.....pallidus.
Lateral groove represented by a slight fossa behind the eyes.....nigrellus.
Lateral groove entirely absent, no traces whatever.....canadensis.

It will thus be seen that those species with the sutural stria have the lateral stria of the head entirely absent.

The color of our species may be thus expressed.

Pale rufo-testaceous, head somewhat darker.....pallidus.
Piceous black, elytra with broad testaceous band.....fasciatus.
Piceous; surface equally shining; thorax flat.....canadensis.
Black; thorax less shining, disc slightly concave.....nigrellus.

The epistome varies in our species,

being rounded in front.....canadensis.
truncate.....fasciatus, and pallidus.
slightly emarginate.....nigrellus.

I. pallidus, Lec. New Species, p. 58.—Pale rufo-testaceous, shining. Head flat, very finely alutaceous and finely but distantly punctured, slightly darker in color than the elytra. Thorax triangular slightly broader than long, base less than half as wide as apex; apex truncate base rounded; anterior angles obtuse rounded; sides feebly rounded and with a slight sinuation behind the middle; anterior margin with a slight impression on each side; disc very faintly concave and with fine median line; surface finely alutaceous and sparsely punctured. Elytra as broad as thorax at apex, slightly broader behind, slightly longer than wide conjointly, surface very finely longitudinally strigose and sparsely punctulate. Abdomen finely alutaceous above and the segments on each side with four punctures, in pairs, forming a rhomb those nearer the anterior margin more internal. Body beneath similar in color and sculpture to upper surface. Legs slightly paler. Length .14 inch; 3.5 mm.

Occurs from New York to Washington, D. C., but rare.

I. fasciatus, Lec. New Species, p. 59.—Black, shining, elytra with broad yellow band not attaining the lateral margin. Head very finely alutaceous and very sparsely punctulate. Thorax triangular, as long as wide, base half as wide as apex; apex truncate, margin on each side with slight impression; base slightly rounded, sides feebly rounded and with slight sinuation at middle; surface flat, very finely alutaceous, sparsely punctulate and with finely impressed median line. Elytra finely longitudinally strigose and sparsely minutely punctulate; color black with broad yellow band wider externally, sides narrowly margined with black; elytra conjointly subquadrate. Abdomen finely alutaceous and with four punctures on each segment, two anterior and two posterior, the anterior more external. Body beneath similar to the upper surface. Legs ferruginous, knees paler. Length .10—.12 inch; 2.5—3 mm.

Occurs along the valley of the Gila River, Arizona, under cottonwood bark; rather common.

The thorax is less transverse than the preceding species. The impression at the anterior margin contains a puncture.

I. nigrellus, Lec. New Species, p. 59.—Black, shining. Head finely alutaceous, vertex bifoveate and with a few punctures. Thorax longer than wide oval, apex truncate, base narrow rounded: sides moderately rounded narrowing only at basal third; apical margin on each side impressed, impression limited externally by a slight carina; disc on each side slightly longitudinally concave, middle slightly less concave and with the median line finely marked; surface slightly, more opaque than the elytra, finely alutaceous and very sparsely punctulate. Elytra longer than wide, finely alutaceous, sparsely punctulate, sutural stria entire. Abdomen very finely alutaceous, and with fine punctures as in *fasciatus*. Legs piceous, knees and apices of tibiæ paler. Length .10 inch; 2.5 mm.

In this the thorax attains its greatest length, among our species. Occurs in the Sacramento Valley south, under oak bark.

I. canadensis, n. sp.—Piceous shining, abdomen nearly black. Head alutaceous, vertex, bifoveate and punctured. Thorax oval as broad at apex as long, flat, finely alutaceous, sparsely punctulate, median line scarcely distinct: apex with slight impression on each side limited externally by a slight elevation; anterior angles obtusely rounded, sides broadly rounded and gradually narrowing to apex. Elytra one-fourth longer than wide, surface nearly smooth very indistinctly alutaceous and finely punctulate: sutural stria distinct and entire; color slightly paler than thorax. Abdomen very finely alutaceous, each segment with four punctures nearer the anterior margin. Body beneath colored as above. Length .10 inch; 2.5 mm.

A single specimen sent me among a number of other species in alcohol by Mr. Johnson Pettit, of Grimsby Ontario.

The species of this genus are all referred to *Eleusis*, Cast., Gemminger and Harold, Catalogus, p. 675, which has priority over *Isomalus*, Er., by five years and should be adopted, the name *Isomalus* being used in the present instance for convenience.

Descriptions of New Species of ELATERIDÆ, of the United States.

BY GEO. H. HORN, M. D.

MERISTHUS, Candeze.

M. cristatus, n. sp. pl. IV, fig. 2.—Pale testaceous. Head moderately convex rather densely clothed with whitish scales, vertex very slightly impressed. Antennæ testaceous, second joint one-half longer than the third, last joint large obliquely emarginate at apex. Thorax longer than broad gradually narrower in front, sides moderately rounded, slightly sinuate behind, hind angles nearly rectangular, anterior angles acute, disc of thorax convex, with transverse basal impression, and flattened in the region of the hinder angles, median line impressed, surface with sparsely placed whitish scales lateral margin distinctly crenulate. Scutellum oval with a strong crest along its middle. Elytra moderately convex, as wide as the thorax, with shallow striæ, intervals finely tuberculate, each tubercle bearing a whitish scale. Body beneath with whitish

scales. Flanks of prothorax with shallow groove for the reception of the tarsi. Legs pale testaceous. Length .14 inch; 3.5 mm.

This species may be readily known by the form of the thorax. It has in common with *pistrinarius* and *scobinula*, the oblique grooves on the flanks of the prothorax for the reception of the tarsi and with the former in having the margins of thorax finely crenulate. The scutellum is very strongly cristate, the crest being rather thin and rising to an extent greater than half the width of the scutellum

One specimen collected by Mr. John Xantus, at Cape San Lucas, Lower California.

M. texanus, n. sp. Pl. IV, fig. 1.—Pale brownish testaceous, with occasionally the disc of thorax and median transverse band of elytra darker and with whitish scales sparsely placed over the entire surface of the body arranged in rows on the elytra in the intervals of the striæ. Head moderately convex and with distinct median impression. Antennæ pale testaceous, last joint large and obliquely emarginate at apex. Thorax nearly as broad as long, slightly broader in front of middle, suddenly narrowed at the front angles which are acute and rather prominent; sides of thorax strongly rounded in front gradually sinuate behind, angles moderately prominent, truncate but not denticulate at tip; disc moderately convex, median line feebly impressed, lateral margin finely crenulate. Elytra moderately convex, as broad as thorax finely striate, intervals tuberculate, each tubercle with a whitish scale. Body beneath brownish testaceous, abdomen much darker. Flanks of prothorax with rather deep grooves for the reception of the anterior tarsi. Legs pale testaceous. Scutellum distinctly carinate. Length .10 inch; 2.5 mm.

This species has for some time been in my cabinet under the name *scobinula*, Cand., with which it agrees very closely in most of the characters given in the description. It differs however in having the margin of thorax finely but distinctly crenulate and the scutellum distinctly carinate. The description and figure of *scobinula*, by Candeze differ so notably from each other that the discrepancy in such an accurate student can hardly be accounted for. I have before me two specimens of this species differing somewhat in the form of the thorax as is shown in the accompanying figure which serve to give a very accurate idea of the form of the species. (See the two sides of the thorax in plate.)

The two specimens before me were collected in Texas by Mr. G. W. Belfrage.

M. scobinula, Cand.—Has not yet occurred in our fauna, the name in the "List" referring to *M. cristatus*.

CARDIOPHORUS, Esch.

C. togatus, n. sp.—Black; feebly shining, sparsely clothed with short cinereous pubescence. Head and thorax densely and finely punctured. Thorax longer than broad, very convex; anteriorly feebly emarginate angles obtuse, sides moderately rounded slightly sinuate behind, basal angles obtuse at tip. Margin rounded, acute near the basal angles, beneath which is the suture, convex inwardly and obsolete in front. Elytra as broad as thorax, with sides feebly rounded and gradually narrowing to apex; surface moderately convex, striate, striæ punctured, intervals flat very sparsely punctulate; color red, apical half black. Scutellum black. Body beneath black, densely punctulate and sparsely cinereo-pubescent. Legs black, tarsi brownish. Ungues simple. Length .30 inch; 7.5 mm.

The color of the elytra is about equally divided between red and black, the colors gradually fading into each other, the black extending obliquely along the suture.

A variety in Mr Ulke's cabinet, has the elytra entirely red with the apex only slightly darker. In all other respects the two specimens agree so closely that I cannot feel warranted in calling it by another name.

The species resembles *C. Dejeanii*, Lec., in form.

Both specimens are from Texas, the type having been collected by Mr. Belfrage, at Waco.

C. Edwardsi, n. sp.—Black; moderately shining, sparsely clothed with pale brownish pubescence, elytra yellowish red with sutural fusiform space black. Head black, densely and finely punctured. Antennæ as long as head and thorax, two basal joints entirely and the bases of the other joints testaceous red. Thorax slightly longer than broad, sides slightly arcuate in front feebly narrowed to base, hind angles slightly divergent acute and not carinate; surface convex, densely, finely and equally punctured, basal impressions deep, median line feebly impressed at base. Elytra as broad as thorax, gradually and arcuately narrowed to apex; color yellowish-red with sutural fusiform black space not attaining apex or scutellum; surface striate, striæ punctured, intervals flat finely and densely punctulate. Scutellum black. Body beneath black, finely and densely punctured. Femora black, tibiæ and tarsi rufo-piceous. Claws not toothed. Length .34 inch; 8.5 mm.

This species resembles in form and size *erythropus* or *floridæ*, but may be known from any in our fauna by its coloration.

Dedicated to Mr. Henry Edwards, of San Francisco, to whom I am indebted for the use of all his unnamed *Elateridæ*, and to whom I owe many of the species in the present paper.

One specimen from California.

C. æneus, n. sp.—Æneous or cupreo-æneous, shining, robust, clothed with greyish hairs. Head finely and densely punctured; antennæ longer than the head and thorax, joint 2 short, joints 3—10 serrate. Thorax wider than long, sides feebly arcuate in front and very slightly narrowing to base; hind angles

obtuse not carinate; surface convex, densely, finely and equally punctured, basal impression moderate. Elytra as broad as thorax at base, gradually narrowed to apex, surface striate, striæ punctured, intervals flat, densely and finely punctulate. Body beneath æneous, more shining than the upper surface, densely punctulate. Legs black with very distinct æneous tinge. Claws not toothed. Length .28—.32 inch; 7—8 mm.

Two specimens collected in California, south of San Francisco. Differs from all the species known to me by its bright æneous lustre and grey pubescence. The thorax although finely punctured is more coarsely so than is usual in the genus or at least among our species.

HORISTONOTUS, Eand.

H. definitus, n. sp.—Robust, sub-opaque, color variable from rufo-testaceous to brownish, surface rather densely clothed with yellowish pubescence, longer on the head and thorax. Head coarsely punctured. Thorax longer than broad, very convex, sides strongly rounded and near the hind angles feebly sinuate, angles short, acute; surface punctured rather closely with minute punctulations densely intermixed; lateral margin distinct in its posterior half. Elytra as broad as thorax, sides feebly rounded, surface convex, rather deeply striate, striæ punctured; intervals flat, very sparsely punctulate. Body beneath very convex, more shining than the upper surface, sparsely punctulate and pubescent, color similar to the upper surface. Tarsal claws feebly dentate at base. Length .30—.32 inch; 7.5—8 mm.

A very distinct species. The thorax is usually darker in color than the elytra.

Collected by myself in Owen's Valley, California.

H. Uhlerii, n. sp.—Brownish or ferruginous, sparsely clothed with greyish pubescence. Head finely punctulate, antennæ brownish testaceous sometimes paler. Thorax one-fourth longer than broad, slightly narrower in front: sides anteriorly slightly arcuate, posteriorly straight subparallel and very feebly sinuate in front of hind angles which are subacute; surface moderately convex, very finely punctulate. Elytra slightly broader at base than thorax and more than twice as long, gradually attenuate behind; surface deeply striate, striæ punctured, intervals convex and costiform at apex, the intervals 2—4—6 more strongly elevated and the eighth still more so. Body beneath densely punctulate and clothed with greyish pubescence. Legs testaceous. Outer angles of coxal plate broadly rounded. Length .24—.28 inch; 6—7 mm.

Two varieties occur. Three specimens from Florida are smaller paler and more shining. Two from Maryland are darker, the thorax being darker than the elytra, less shining and larger. I cannot find any other characters than these on which to separate them and these I deem insufficient.

Through the kindness of Dr. Candeze, I have been enabled to compare this species with *H. exoletus*. The principal differences are found in the greater elevation of the intervals, especially the eighth,

at apex and the form of the free edge of the coxal plate. In *exoletus* the free edge is more prominent and is exactly rectangular, the angle being very distinctly marked; in the present species the coxal plate is shorter and the free edge rounded.

The Florida specimens were presented me by Mr. P. R. Uhler, of Baltimore to whom I dedicate it, as an evidence of appreciation of his labors in another order of insects, as well as for his kindness in the continued gift of specimens.

COPTOSTETHUS, Wollast.

C.? americanus, n. sp. pl. IV, fig. 3.—Brown opaque, sparsely clothed with silvery pubescence. Head opaque, granulose; frontal plate narrowed, rounded anteriorly. Antennæ slender longer than half the body, second joint longer than half the third, joints three to eleven gradually increasing in length, the latter not being terminated by a false joint. Thorax very slightly longer than wide, very convex, opaque and finely granulate, sides rounded narrowing in front and at base, hind angles short, subacute not carinate; lateral margin in its entire length rounded, suture obsolete and inferior. Scutellum transversely cordiform. Elytra elongate oval, very convex, striæ punctured, intervals granulately rugose, sides rounded and rapidly attennate to apex. Body beneath opaque granulose, similar in color to the upper surface. Legs pale brown. Length .14 inch; 3.5 mm.

This insect agrees with all the characters given by Candeze, of the genus in which it is placed with doubt, differing only in the coxal plate being less suddenly dilated and the antennæ not terminated by a false joint. These characters seem hardly of sufficient moment to cause its separation generically, although the comparison of a type of *Coptostethus*, with this one might show sufficient cause for placing it in a new genus. The body is apterous and the elytra apparently connate. The elytra are elongate oval, very convex the humeri broadly rounded and paler than the rest of the surface. The prosternal sutures are fine and parallel and the prosternal spine short and very obtuse at tip. The tarsi of the present specimen are all mutilated one only having four joints, the characters agreeing fully with *Coptostethus*.

The unique before me was obtained by Dr. Samuel Lewis, from Louisiana.

CRYPTOHYPNUS, Esch.

C. Sanborni, n. sp.—Black shining, moderately depressed, sparsely clothed with with short black hairs. Head coarsely and sparsely punctured. Antennæ brownish at tip, basal half red. Thorax longer than wide, equally but feebly narrowed at apex and base, sides moderately rounded, hind angles strongly divergent, slender, acute and carinate; disc with median line feebly impressed sparsely and finely punctured. Elytra as broad at base as thorax, gradually broader behind the middle, striate, striæ punctured, intervals flat sparsely

punctulate. Body beneath black punctulate with coarser and finer punctulations intermixed, sparsely cinereo-pubescent. Legs red. Length .26—.30 inch; 6.5—7.5 mm.

Resembles *hyperboreus*, which is found in the extreme north of both hemispheres, but differs by its black color, greater convexity and smoother thorax with the median line more distinctly impressed, and differs from all our species by the slender and strongly divergent hind angles.

The specimens were kindly presented by Mr. F. G. Sanborn, of Boston, who obtained them from Mount Washington, New Hampshire.

C. æstivus, n. sp.—Brownish black, feebly shining, and with a very slight tinge of bronze, and sparsely clothed with short yellowish pubescence. Head very feebly convex, sparsely punctured, sub-opaque, frontal margin with narrow testaceous band. Antennæ brownish black, three basal joints testaceous. Thorax slightly broader than long, very convex, sides strongly rounded, narrowed at base and apex, hind angles acute feebly divergent, with long carina, and of a yellow color; surface sparsely punctulate. Scutellum oval margined with testaceous. Elytra as broad at base as thorax, moderately convex, feebly narrowed toward apex, color slightly paler than thorax and with oblique humeral testaceous stripe extending one-third the length of elytra, apex obscurely brownish testaceous; surface feebly striate, intervals flat and finely punctulate. Body beneath brown-black, last segment of abdomen, legs including the coxæ, and parts of mouth yellowish testaceous. Epipleuræ brownish testaceous. Length .18—.22 inch; 4.5—5.5 mm.

Allied to *quadripustulatus*, but larger and with distinct æneous tinge. The thorax is broadest in front of middle and more decidedly punctulate and the carina of the hind angles one-third and nearly one half the length of the thorax. The elytra are gradually narrowed from base to apex and not elongate oval as in the European species.

For the specimens in my cabinet I am indebted to S. V. Summers, of St. Louis, Missouri, in which region he collected them.

C. perplexus, n. sp. pl. IV, fig. 4.—Black, with æneous tinge, shining; form slender. Head sparsely punctured front with two faint linear impressions converging to the vertex. Antennæ piceous three basal joints yellowish testaceous. Thorax convex, very sparsely punctulate, shining, longer than wide broadest slightly in front of middle, and more narrowed at base than apex, hind angles acute, slender, moderately divergent, yellowish in color and with long carina; sides moderately arcuate. Elytra oblong, piceous black, shining with æneous tinge, humeri with rufous spot; surface striate, striæ punctured, intervals moderately convex biseriately punctulate and sparsely hairy. Body beneath black, closely punctulate. Legs pale yellowish testaceous, Length .12 inch; 3 mm.

This species was referred by Dr. Leconte (Proc. Acad. 1866, p. 389) to the bimaculate variety of *quadripustulatus*, of Europe. There be-

ing many points in the description by Candeze, not fitting the specimens before me I gave our species a name. Through the kindness of Dr. Candèze, I have been enabled to compare the two species. The European form is more robust, broader and less shining, the thorax is as wide as long, and more constricted at base than apex. The elytra are not or barely twice as long as wide and the intervals scarcely convex. There is also no æneous tinge to the surface.

Specimens occur in Pennsylvania, and more abundantly, although not commonly in the District of Columbia (Ulke).

In general aspect our species recalls the form of *Horistonotus transfugus*, Lec.

C. dubius, n. sp.—Brown, sub-opaque, oblong, moderately depressed, sparsely clothed with short cinereous pubescence. Head finely granulose. Antennæ brownish, pale yellow at base. Thorax not longer than wide, finely granulose and more shining at base, median line smoother and subcarinate, sides parallel behind, slightly rounded and somewhat narrowed in front; hind angles testaceous, short, acute at tip and carinate, carina rather distant from margin and one-third the length of thorax. Elytra short, twice the length of thorax, and as wide as base, sides nearly parallel and obtusely rounded at apex, moderately convex; surface striate, striæ punctured, intervals flat densely granulose. Body beneath piceous, sparsely punctured legs testaceous. Length .10—.12 inch; 2.5—3 mm.

In one specimen before me the basal margin of the elytra is narrowly testaceous, also the suture near the apex and the apical margin of the last abdominal segment. This species is from the description closely allied to *dermestoides*, of Europe, and to our own *striatulus*, but is more convex and less opaque and smaller than the latter.

Two specimens are before me from Nebraska and Dacota, from the cabinet of Mr. Ulke.

C. colon, n. sp.—Black, opaque, sparsely clothed with silvery pubescence. Head convex, granulately punctured. Antennæ black, not as long as the head and thorax. Thorax slightly longer than wide, narrower at apex than at base sides moderately arcuate, hind angles acute, divergent, not prolonged, with an acute carina extending nearly half the length of the thorax; surface convex opaque granulately punctured and with the median carina distinctly elevated. Elytra slightly broader than thorax and twice as long, feebly convex, black, opaque with a yellow spot on each at the apical third; surface striate, striæ punctured, intervals flat punctulate and finely rugose. Body beneath densely punctured. Legs black, tarsi piceous. Length .16 inch; 4 mm.

This species is scarcely more convex than *striatulus*, which it resembles in general aspect, differing notably in the carinate thorax and elytral spot. From the dark varieties of *ornatus*, it differs in being much less convex, less shining and with flat elytral intervals and by the two sub apical spots.

One specimen before me collected in the Amador Valley, California.

ELATER, Linn.

E. atripennis, n. sp.—Body entirely reddish-yellow, head piceous, elytra black, shining; form elongate parallel feebly narrowed at the extremities. Head coarsely punctured and sparsely clothed with short yellow hairs. Antennæ ferruginous, third joint cylindrical longer than the second, shorter than the fourth, joints four to ten feebly subserrate. Thorax broader than long feebly narrowed in front, sides slightly rounded and feebly sinuate near the hind angles, which are short, acute and obtusely carinate; disc moderately convex, sparsely punctured and clothed as the head. Elytra as wide as thorax feebly narrowed to apex; color black, shining, sparsely clothed with short black hairs; surface moderately convex feebly striate, striæ deeper at sides, punctured; intervals flat, sparsely rugosely punctulate. Body beneath and legs entirely reddish yellow, sparsely punctulate and pubescent. Length .34 inch; 8.5 mm.

Allied to *collaris* and *palans*, but differs from either by its more elongate form and from all other Elaters of similar system of coloration above by the entirely reddish-yellow abdomen and legs. The thorax is uniform in color, the hind angles being of the same color as the rest of the surface.

One specimen, ♀, in cabinet of Mr. Ulke, from California.

E. Behrensi, n. sp. pl. IV, fig. 5.—Body black, feebly shining, elytra red with an irregular cordiform spot at apex. Head black, coarsely but sparsely punctured. Thorax scarcely longer than broad at base, gradually narrowed in front sides feebly rounded in front gradually divergent behind, hind angles acute, carinate; disc moderately convex coarsely but not densely punctured and with the head sparsely clothed with black hairs. Elytra as broad as thorax, sides feebly rounded and gradually narrowed to apex, disc moderately convex, striate, striæ coarsely punctured, intervals flat sparsely punctulate and sparsely clothed with reddish-yellow hairs, those of the black space being dark brown. Body beneath black, sparsely punctulate and sparsely clothed with brownish hairs. Legs black, tarsi brown. Length .42 inch; 10.5 mm.

The apical black space occupies about one-third the length of the elytra and is of irregular cordate form, and extends to the margin. Allied to *cordifer* and *dimidiatus*, differs from the former by the extent of the elytral spot and the more deeply striate elytra, and from the latter by its more densely punctured thorax and by the hairs clothing it being black while in *dimidiatus*, they are reddish-yellow.

One specimen from Sonoma, California, presented by Mr. James Behrens.

The following species so nearly resembles the preceding in form and sculpture that the points of difference only are given.

E. cordatus, n. sp. pl. IV, fig. 7.—Thorax more densely punctured and with the head clothed with ferruginous yellow hairs; sides more strongly rounded,

less narrowed in front. Elytra less deeply striate, striæ more indistinct near the suture. Length .30 inch ; 7.5 mm.

One specimen, from California. Cabinet Mr. H. Ulke.

Our species of *Elater* with red elytra and a black spot at apex usually cordiform in shape, may be distinguished in the following manner.

Thorax clothed with black hairs, surface opaque.
Apical spot cordiform, margin of elytral apex red..... .....**cordifer.**
Apical spot irregularly cordiform covering the entire apex..... .**Behrensi.**
Thorax with yellow hairs, surface sub-opaque or shining.
Apical spot cordiform covering the entire apex.....**cordatus.**
Apical spot cordiform, suture and apical margin red.....**apicatus.**
Apical half of the elytra black, not cordiform in outline; thorax very shining.....**dimidiatus**

The hairs of the thorax in the last three species are variable in color being either yellow, ferruginous or pale reddish brown, the term yellow being used as a convenient expression for separating them from the preceding two, in which the hairs are very black and more decidedly erect.

ELATRINUS, nov. gen.

The above genus is proposed for an *Elaterid*, allied to *Elater* and *Elastrus*, with characters as follows :—

Head feebly convex, anterior margin rounded and rather elevated. Antennæ strongly serrate ; first joint moderate, second very short, broader than long, 3—10 broadly triangular, eleventh longer but without false joint.

Maxillary palpi with last joint elongate oval, truncate at tip, labial subtriangular.

Prosternal sutures double, slightly convex inwards and canaliculate anteriorly.

Coxæ strongly and suddenly dilated within and obtusely angulate at free edge of plate.

Tarsi simple, first joint longer than the three, and nearly as long as the four following, together ; joints 2—3—4 gradually decreasing in length. Claws simple.

By the above characters it will be seen that the present genus is is allied to *Elastrus* from which it differs in the structure of the antennæ.

E. anthrax, n. sp.—Black, shining, sparsely clothed with brownish-black hairs. Head coarsely but sparsely punctured. Antennæ black. Thorax longer than broad, gradually narrowed anteriorly, sides in front feebly rounded,

subparallel behind the middle; hind angles acute, prolonged backwards and strongly carinate; disc moderately convex sparsely punctured. Elytra as broad as thorax, sides feebly rounded and gradually narrower to apex; disc moderately convex feebly striate coarsely punctured becoming obsolete at apex, intervals flat rugosely punctured. Body beneath black, moderately shining rather densely punctulate and sparsely pubescent. Legs black. Length .28 inch; 7 mm.

The antennæ are longer than half the length of body. The elytra scarcely longer than twice the thorax while the latter is but little longer than the width at base. This species resembles in form a very diminutive *Ludius ater*, Cand.

The unique before me was kindly loaned by Mr. Ulke, by whom it was obtained from "California," without more precise locality.

DRASTERIUS, Esch.

D. grandicollis, n. sp. pl. IV, fig. 8.—Pale rufo-testaceous, sub-opaque, surface sparsely clothed with short yellowish pubescence. Head with distant coarse punctures, and fine punctuation densely placed in the intervals. Thorax moderately convex and doubly punctured like the head, longer than broad and narrower behind, sides strongly rounded, and with the hind angles parallel, unicarinate, carina very close to margin. Scutellum very convex. Elytra narrower than thorax, slightly broader behind the middle, at apex obtuse; surface moderately convex, finely striate, striæ with coarse punctures; intervals flat with few sparsely placed fine punctures. Under surface punctured as above, sparsely pubescent. Legs somewhat paler. Tarsi simple. Length .24 inch; 6 mm.

This species may be known among our *Drasterius*, by the double punctuation of the thorax. The thorax is unusually large and with the head nearly equals the area of the elytra. The sides of the thorax are strongly rounded and the hind angles project backwards with their outer margins parallel. The carina is strong and placed close to the margin so that when seen from above the hind angles appear not to be carinate. According to the classification of Candeze this species should be referred to *Heteroderes*, a genus founded on the peculiar surface sculpture, to the exclusion of more important organic characters and therefore like *Aeolus* rather heterogeneous.

One specimen in the cabinet of Dr. Leconte with no special designation of locality except California.

D. marginicollis, n. sp.—Piceous black, moderately shining, thorax picco-testaceous with very narrow space at side, and large discal spot piceous black, antennæ and legs testaceous. Surface sparsely clothed with yellowish hairs. Head and thorax coarsely punctured the former more densely. Thorax slightly longer than broad, sides moderately rounded and gradually narrowing in front, hind angles acute carinate and prolonged backwards; disc moderately convex. Elytra as broad as thorax feebly narrowed behind, surface moderately convex,

deeply striate, striæ punctured, intervals convex, subrugose and sparsely punctulate; color piceous black, shining, with apex and narrow space at middle of side rufous. Body beneath, black, with tips of terminal segment of abdomen and narrow transverse band of prosternum rufous; surface sparsely punctulate and pubescent. Legs, antennæ and parts of mouth yellowish testaceous, femora darker. Length .26 inch; 6.5 mm.

This species resembles some of the darker varieties of *elegans* but may be distinguished from all our species by its relatively shorter thorax, of which the disc is more convex, with coarser and denser punctures. The thorax is dark rufous in color, the dark discal space large and ill defined and a very narrow space along the middle of the lateral margin is also dark.

Two specimens from Oregon are before me.

MEGAPENTHES, Cand.

M. aterrimus, n. sp.—Black, sub-opaque, sparsely clothed with short black hairs. Head coarsely and almost confluently punctured, anterior margin of front truncate distinctly elevated and margined, Antennæ strongly serrate second and third joints small. Thorax convex, very densely punctured and opaque, longer than broad, and narrower in front, sides in front slightly rounded, behind the middle straight and slightly divergent, hind angles acute unicarinate and slightly divergent from the line of the sides. Elytra as broad as thorax at base gradually narrower to apex, convex, striate, striæ punctured, the inner more finely, intervals flat densely punctulato-rugose. Body beneath, black, more shining than the upper surface and densely punctulate, prosternum very coarsely punctured. Legs black. Length .86 inch; 22 mm.

The median line of the thorax is rather deeply impressed at base but is very short as in *granulosus* and *turbulentus*. This species resembles completely the latter except in color. The frontal margin is very slightly but none the less distinctly elevated and margined. Candeze appears not to have been able to detect this elevation in *limbalis*, and has placed the latter as an aberrant *Ludius*; *tartareus*, Lec., although smaller resembles the present species very greatly in its specific characters and the two can hardly be distinguished except by the total absence of any elevation of the frontal margin so that the labrum appears to be almost continuous with it. *M. turbulentus*, which like the present species is totally black, has the thorax more rugosely punctured and more convex as well as less narrowed in front; the elytra are subparallel at the anterior two-thirds and the intervals much more convex and less rugose.

The species is widely distributed, specimens being before me from the southern Coast Range, and Owen's Valley, California and from New Mexico.

M. elegans, n. sp. pl. IV, fig. 12.—Black, shining, with short cinereous pubescence; hind angles of thorax, humeral spot of elytra and small transverse spot at apical fourth bright red. Head convex, densely covered with umbilicate punctures, front rounded, vertex with shallow impression. Antennæ sub-serrate, second and third joints small scarcely equal to the fourth, joints 4-8 nearly equal and sub-serrate, joints 9—11 cylindrical the last equal to the preceding. Thorax slightly longer than broad, feebly narrowed in front, sides anteriorly moderately rounded, at base nearly straight and gradually divergent, anterior angles not prominent, hind angles acute and uniearinate; disc convex densely covered with umbilicate punctures. Elytra as broad as prothorax, sides feebly rounded gradually narrowing to apex, surface moderately convex, striate, striæ punctured, intervals flat, densely but finely murieated. Body beneath black, punctured and sparsely pubescent. Legs black, tarsi piceous. Length .42 inch; 10.5 mm.

The red spot at the hind thoracic angles is irregular in outline but includes the entire angle above and below. The humeral spot is large extending along the elytra for one-half their length irregular in outline at tip but not involving the first two sutural interspaces and not extending on the epipleuræ at humerus; in the centre of this is a small black spot on the fifth stria. The red spot at the apical fourth is transverse, broader externally not attaining either suture or margin.

The unique before me is a male, collected by Mr. Gabb, in the southern Coast Range, of California.

M. Rogersi. n. sp. pl. IV, fig. 9.—Black, shining, moderately robust, sparsely clothed with short yellow pubescence. Head moderately convex densely punctured. Antennæ rufous at base, brown in the last six joints, not as long as thorax. Thorax black, shining, sparsely but evenly punctulate, convex, and with a slight impression in front of middle on each side of the disc; longer than broad; hind angles acute, not divergent and strongly uniearinate. Elytra slightly more than twice as broad as long not wider at base than thorax, feebly narrowed to apex: surface convex, moderately striate, striæ punctulate, intervals feebly convex and rather closely punctured; color, orange yellow, with small scutellar space, at middle a broad band widest at suture not attaining the margin, at apical three fourths on each elytron an arcuate band attaining margin and suture, black; sides of elytra with very narrow black line along the apical two-thirds; epipleuræ orange yellow, black at humeral end. Body beneath black, closely punctulate. Legs entirely rufous. Length .34 inch; 8.5 mm.

This species resembles in form an *Elater* of the *cordifer* group, but is rather more convex. It may easily be distinguished from all our species of *Megapenthes*, by its system of coloration. The two bands described above are united along the suture by a narrow stripe. The anterior band does not attain the lateral margin except by a very narrow line.

The unique in my cabinet was collected by Mr. Rogers, in Ontario (Canada West) and kindly placed in my collection.

ANCHASTUS, Lec.

A. desertus. n. sp.—Pale rufous, moderately shining. Head and thorax very coarsely punctured. Antennæ with third joint very slightly shorter than the fourth. Thorax longer than broad, sides feebly rounded and gradually narrower from base to apex, basal angles acute prolonged backwards and with but one very distinct acute carina; surface moderately convex. Elytra slightly narrower than the thorax, moderately convex, gradually narrower from base, surface striate, striæ punctured, intervals flat, rather closely punctured. Body beneath of same color as above, punctured and sparsely pubescent. Length .24—.30 inch; 6—7.5 mm.

In this species the coxal plates are strongly dilated internally but not suddenly as in *cinereipennis* and *bicarinatus*. The hind angles are unicarinate the outer carina persisting, but not parallel with the margin. The third joint of antennæ is but slightly shorter than the fourth. The addition of species to our fauna, seems to place in doubt the validity of the genera *Crepidoteitus* and *Brachycrepis*.

Not rare at Fort Yuma, California.

A. sericeus, n. sp.—Pale reddish-brown, shining, surface clothed with short yellowish hairs with decided silken lustre. Head densely and coarsely punctured. Thorax nearly square slightly narrower in front, sides anteriorly slightly arcuate, at middle nearly parallel, at base very feebly sinuate; hind angles acute, prominent, strongly bicarinate, surface rather densely but not coarsely punctured, moderately convex, median line feebly channelled. Elytra as broad as thorax at base, gradually narrowed to apex; surface moderately convex, feebly striate, striæ punctured, intervals flat, distinctly biseriately punctulate. Body beneath and legs similar in color to the upper surface, shining, punctured, and with yellowish silken pubescence. Prosternal sutures, in front feebly channelled. Antennæ with the third joint longer than the second, and both together scarcely equal to the fourth. Length .42 inch; 10.5 mm.

Evidently allied to *cafiseeus* and *rufivellus*, and in our fauna to (*Brachycrepis*) *bicarinatus*, from which it differs by the form of thorax, stronger angular carinæ and the structure of the antennæ, as well as by the less suddenly dilated coxal plates.

One specimen from Camp Grant, Arizona.

MONOCREPIDIUS, Esch.

M. robustus, n. sp.—Color variable from pale ferruginous to ochraceous or brown; form robust, surface rather densely clothed with short ochreous hairs. Head and thorax rather coarsely and deeply punctured with very fine punctures densely placed, intermixed. Antennæ as long as head and thorax, third joint scarcely shorter than the fourth and similar, one-third longer than the second. Thorax as long as broad, robust, anteriorly feebly emarginate, angles obtuse, sides rounded in front, slightly sinuate behind, hind angles prolonged,

acute, slightly divergent and distinctly carinate. Elytra convex, robust, narrower at base than thorax gradually broader behind the middle, apex obtuse; surface striate, striæ deeply punctured, intervals flat with punctures sparsely and irregularly placed each bearing a hair. Body beneath somewhat darker in color than the upper surface and pubescent. Prothorax beneath punctured as above. Abdomen finely punctured with very minute punctures intermixed, last segment more decidedly opaque. Legs pale yellowish testaceous, fourth tarsal joint with lobe very small and robust. Length .22—.30 inch; 5.5—7.5 mm.

This species resembles in many of its characters, *M. sordidus*, Lec. but may be known by its more robust form. The fourth tarsal joint of the latter species has a long lobe nearly equalling half the fifth joint. Both species should be referred to Section III, Candeze, or if the genus *Heteroderes*, should be thought worthy of preservation, *M. sordidus*, Lec., should be placed near *amplicollis*, from the presence of a fine carina, within the main carina of the hind angles and *M. robustus*, Horn, from the absence of this character near *musculus*. The sole character on which *Heteroderes* is founded consists in the peculiar sculpture of the thorax in which the large punctures are rather regularly placed over the entire surface while between are very minute punctures so densely placed as to make the surface appear opaque.

Abundant at Camp Grant, Arizona.

M. mutuus, n. sp.—Brown sub-opaque, oblong, convex, sparsely clothed with yellowish-grey hairs. Head coarsely but sparsely punctured. Antennæ shorter than head and thorax, second and third joints sub-equal, together nearly equal to the fourth. Thorax longer than wide scarcely narrowed in front, sides very feebly rounded, very slightly sinuate near the hind angles which are scarcely divergent but acute and distinctly bicarinate, the outer carina acute prolonged nearly half the length of thorax and near the margin, the inner carina short scarcely half the length of the angle; disc more convex than usual in our species and with coarse equal punctures rather closely placed. Elytra as broad as thorax, convex, sub-parallel in front, slightly narrowed and obtusely rounded at apex, surface striate, striæ punctured, intervals flat punctulate and obsoletely reticulate. Body beneath colored as above, sparsely punctulate. Legs testaceous. Length .50 inch; 12.5 mm.

This species is rather more convex than any other in our fauna although not as robust as *auritus* and its allies, being four times as long as wide. The lobe of the fourth joint is very narrow and very short even more so, proportionately than in *auritus*. The bicarination of the hind angles is here very distinct, but is not unique in the genus, as the same may be seen in *lividus*.

The specimen kindly loaned by Mr. Ulke, is from Arizona, probably near Fort Whipple.

LUDIUS, Latr.

L. Lecontei, n. sp.—Elongate, black, sub-opaque, very sparsely clothed with greyish hairs. Head and thorax coarsely and densely punctured. Thorax longer than broad, sides rounded in front, parallel at posterior two-thirds, hind angles divergent and acutely carinate. Elytra as broad as thorax at base, sides nearly straight and gradually narrowed to apex; apex feebly sinuate and with the suture slightly prolonged; surface with fine punctures arranged in striæ, the intervals finely and distantly biseriately punctured. Body beneath sparsely punctulate. Length .72—.96 inch; 18—24 mm. Pl. IV, fig. 13.

The antennæ have the last joint with a false piece at tip as in all our other species. Resembles *L. ater*, Cand., differs in the thorax being less narrowed in front, less convex and with the hind angles more strongly divergent and more acutely carinate. The elytra are also differently sculptured there being striæ of moderately fine punctures rather distantly placed, the intervals being marked with still finer punctures biseriately arranged but more distantly placed than the larger punctures. The elytral apex (♂) is distinctly sinuate and the suture prolonged as in *Orthostethus infuscatus* Germ. In *L. ater*, Cand., the elytra are densely punctulate without any strial arrangement and the apex obtuse. The hind coxal plates at the free edge of the dilated portion are more strongly angulate.

In general aspect the present species is much more slender than any of our *Ludii*, and much less convex than *L. ater*, to which it is most closely allied.

The males and females differ in a less marked degree, the form of thorax scarcely varying.

Specimens are known to me from Santa Barbara, Tejon and San Diego, California.

LIMONIUS, Eseh.

L. quadrimaculatus, n. sp.—Black, shining, sparsely clothed with greyish hairs. Head flattened frontal margin feeble, surface densely punctured. Antennæ, especially in the male strongly serrate beyond the third joint; joints 2—3 small, rounded, scarcely equalling together the fourth. Thorax one-fourth longer than broad at base, gradually narrower in front, sides feebly rounded; apex feebly emarginate angles not prominent, hind angles acute not diverging beyond the line of the sides, and with an acute carina extending slightly more in length than ¼ that of the angle; disc of thorax moderately convex rather densely punctured. Elytra as broad as thorax at base feebly narrower toward apex, sides very feebly rounded, moderately convex, surface finely striate, striæ punctured intervals moderately convex and scabrous; color black shining with bright humeral spot extending on the epipleuræ and one-third the length of the elytra, not attaining the suture, another transverse spot at the apical fourth attaining neither the suture nor margin. Body beneath black shining, sparsely punctured and clothed with greyish hairs. Legs black. Tarsi with the first joint of anterior and middle nearly equal to the two following;

of the hind tarsus longer than the second, scarcely equalling that and the succeeding together, joints all simple not lobed beneath. Length .20—.24 inch; 5—6 mm. Pl. IV, fig. 16.

Allied to *L.* (Gambrinus) *stigma*, Dej., from which it may be easily distinguished by its more slender form, the elytral spots, and the denser punctuation of the thorax. It agrees with that species in not having the prosternal sutures excavated in front.

Numerous specimens were captured by myself at Keyesville, California, feeding on the flowers of the Buckeye, (Æsculus)

L. Ulkei, n. sp.—Black, opaque, elytra red with a narrow space along the suture and margin at apex black. Head with large cribrate punctures. Thorax longer than broad, slightly narrower in front, sides very feebly rounded and slightly undulate and very suddenly narrowed at the anterior angles: hind angles very feebly divergent, truncate and carinate; disc moderately convex with large, closely placed, deep punctures. Elytra as wide as thorax, sides feebly rounded and very slightly narrower at apex, moderately depressed surface not deeply striate, striæ punctured, intervals flat, densely punctulate. Body beneath and legs black, moderately shining, rather closely punctulate Length .42 inch; 10.5 mm. Pl. IV, fig. 14.

Closely allied to *mirus*, Lec., with which it agrees in a similar coloration and in the front being rounded, not emarginate. The prosternal sutures are canaliculate in front. It differs from that species by having merely a narrow space along the apical margin and for a short distance along the suture black, while *mirus*, has the apical third of the elytra black. The thorax differs notably. In *mirus*, the sides gradually converge to the anterior angles, in the present species they become suddenly narrowed so that the anterior angles appear broadly rounded and obtuse. In general aspect the species is broader and more depressed.

Two specimens are before me, one of which is from the cabinet of Mr. Ulke, to whom it is dedicated as acknowledgment of the many favors so often referred to in the present paper. Both specimens are from California, that in my cabinet having been collected in the Coast Range, south of San Francisco.

L. cribricollis, n. sp.—Ferruginous brown, moderately shining, surface sparsely clothed with short yellowish pubescence; form slender, elongate. Head sparsely umbilicately punctured, front rounded. Thorax moderately convex, longer than broad, feebly narrowed in front, sides anteriorly feebly arcuate, posteriorly feebly sinuate, apex feebly emarginate, hind angles acute, slightly divergent and carinate; surface densely covered with umbilicate punctures. Elytra as broad at base as thorax, gradually narrower to apex, surface striate, striæ punctured; striæ near suture more distinct, punctures smaller, outer striæ very faint punctures larger; intervals flat with a single series of punctures irregularly placed. Body beneath of same color as above. Pro-

thorax densely cribrately punctured, prosternal sutures not canaliculate in front. Pectus and abdomen coarsely punctured and sparsely pubescent. Length .36 inch; 9 mm.

Abundantly different from our species of *Limonius*, by the thoracic sculpture as well as by its slender form, resembling rather some of our elongate *Melanotus*.

One specimen from California, without special designation of locality.

L. nitidulus, n. sp.— Black, shining with a tinge of æneous, surface sparsely clothed with cinereous pubescence. Head coarsely punctured, vertex with slight impression, frontal margin truncate and at middle slightly emarginate. Antennæ black, third joint longer than second and equal to fourth. Thorax longer than broad, sides feebly rounded, gradually narrowing in front, and near front angles strongly rounded, and near base slightly sinuate, hind angles sub-acute and carinate, disc convex shining not coarsely nor densely but equally punctured. Elytra as wide as thorax feebly narrowing behind, surface moderately convex, finely striate, intervals flat densely and equally punctulate. Body beneath entirely black, sparsely punctulate and pilose. Prosternal sutures in front distinctly canaliculate. Length .24—.28 inch; 6—7 mm.

Allied to *L. nitidicollis*, Lec. (Ann. Mag. Nat. Hist. Dec. 1869), differs as follows; thorax broader, sides more strongly rounded in front, disc less bronzed and more densely and coarsely punctured; the elytral intervals are densely and evenly punctulate, those of *nitidicollis*, being biseriately punctulate and on the alternate intervals only, especially toward the basal region. The margin of front of *nitidulus*, is truncate and even slightly emarginate at middle, that of *nitidicollis*, being rounded. The third joint of antennæ of the former species is as long as the fourth and in the latter decidedly shorter, and while *nitidulus* has the prosternal sutures anteriorly distinctly canaliculate, those of *nitidicollis*, are not so.

Several specimens were collected by Mr. Gabb, in Southern Oregon.

According to the tables of Candeze, those two species are allied to *parvulus*.

L. infuscatus, Motsch. Bull. Mosc. 1859, IV, p. 371, and **L. occidentalis**, Cand. Monog. III, p. 411, are not synonymous as placed by Leconte in the List p. 47.

Specimens of the latter species have been sent me by Mr. Edwards, which differ in many important particulars from the type of *infuscatus*, sent to Dr. Leconte, by Motschulsky. In color both agree in having ferruginous red elytra, *occidentalis*, being the brighter in color that of *infuscatus*, inclining to brownish, usually slightly bronzed; the thorax of *infuscatus*, is shining tinged with æneous and not densely punctured; *occidentalis* is black without lustre and very

coarsely and densely punctured. The thorax is longer than wide in *infuscatus*, nearly square in *occidentalis*, and more convex. *L. consimilis*, Walker, Nat. in Vancouver, II, p. 325, is from the notes furnished me by Dr. Leconte, identical with *L. infuscatus*, Motsch.

L. maculicollis, Motsch. Bull. Mosc. 1859, IV, p. 372.—Æneous black, feebly shining, margin above and below and base of thorax also tibiæ and tarsi rufo-testaceous. Head coarsely and densely punctured almost eribrate. Thorax nearly square, slightly longer than broad, and slightly narrowed at apex and base, sides feebly rounded, basal angles slightly oblique and not carinate, disc convex, faintly canaliculate. Elytra punctato-striate, interstices flat, rugosely punctured and sparsely cinereo-pilose. Body beneath sparsely punctured and pilose. Prosternal sutures and apex of lobe rufo-testaceous. Length .26 inch: 6.5 mm. Pl. IV, fig. 17.

Resembles in many of its characters, *L. nimbatus*, Lec., near which it should be placed in systematic arrangement, differs in its larger size, darker color and has the antennæ and femora totally black.

On account of the rarity of the insect and the difficulty of obtaining access to the description, this short notice has been introduced.

The unique in my cabinet is from the Coast Range, of California, south of San Francisco, collected by Mr. Gabb.

L. discicollis, Cand. Mem. Belg. 1865, p. 49.=**L. maculicollis**, Motsch. Bull. Mosc. 1859, IV, p. 372.—Specimens are before me, through the kindness of Mr. H. Edwards, of San Francisco, agreeing with the descriptions of both the authors above cited. The former differs from the latter in having the lateral yellowish-red thoracic space much broader so that the black discal space is reduced to a fusiform stripe. In every other respect they agree. The species is very closely allied to *nimbatus* Say, (*infernus*, Lec.) and differs by its black color and by the hind thoracic angles being obliquely truncate.

L. humeralis, Cand. Monog. III, p. 402.=**L. ornatulus**, Lec. Pacif. R. R. Jour. App. I, p. 46, 1857.

This species is very variable in its coloration, some specimens having the elytra in great part yellow. In the variety described by Candeze, the yellow space is reduced to a minimum and consists only of a small spot at the middle of the base of each elytron, and in one specimen before me this is almost totally obsolete.

ATHOUS, Esch,

A. axillaris, n. sp.—Pale yellowish ferruginous, feebly shining, antennæ, median space of thorax and elytra (except humeri) brownish, surface sparsely clothed with yellowish pubescence. Head yellow ferruginous, densely punctured deeply concave, front truncate. Antennæ brownish, second joint of antennæ one-half the length of third, third somewhat shorter than fourth, joints from third feebly serrate, last joint cylindrical slightly longer than the preceding. Thorax slightly longer than broad gradually narrower in front, sides nearly straight, anterior angles prominent but obtuse, hind angles not carinate, obtuse at apex and with a very slight emargination in the lateral margin im-

mediately in front of the hind angle. Disc of thorax rather densely but not very coarsely punctured, color above and beneath yellowish ferruginous except the middle third of the upper surface which is brownish. Elytra slightly wider than the thorax, feebly convex, striate, striæ punctured, intervals convex, rugosely punctured; color brownish except humeral angles which are yellowish ferruginous. Body beneath more shining than the upper surface sparsely punctured and pubescent, pale yellowish ferruginous, abdomen and prosternum somewhat darker. Epipleuræ yellowish ferruginous. Legs pale yellowish testaceous. Tarsi with first joint as long as the two following which are not sublobed beneath, fourth joint small scarcely longer than half the third. Length .42 inch; 10.5 mm.

The antennæ of this species are equal in length to about half that of the entire body. It is from the tables of Candeze allied to the European, *A. procerus*.

The unique in my cabinet was collected by Mr. Gabb, in the southern Coast Range, of California.

A. flavangularis, n. sp.—Slender, parallel, piceous shining, with distinct æneous tinge. Head coarsely punctured, front concave and bi impressed, anterior margin feebly reflexed. Antennæ not serrate, piceous, basal joint yellow, third joint one-half longer than the second. Thorax moderately convex, piceous black, angles yellowish testaceous, surface moderately punctured; one-third longer than wide at base and slightly narrower in front, sides very feebly arcuate, slightly sinuous at middle, anterior angles slightly explanate and prominent outwardly, hind angles obtuse not carinate slightly divergent, and with a slight emargination on the outer edge. Elytra parallel at anterior three fourths, moderately convex and more than three times as long as wide, surface with rows of rather coarse punctures replacing the striæ, intervals sparsely punctured. Body beneath brownish sparsely punctulate. Legs pale testaceous. Surface above and beneath sparsely clothed with short cinereous pubescence. Tarsi with second and third joints sublamellate, fourth joint very small nearly hidden in the third. Length .36 inch; 9 mm.

Closely allied to *acanthus*, but differs in color and lustre and with the anterior angles more prominent and the hind angles distinctly divergent. The elytra are transversely more convex than in *acanthus*, in which the surface is striate.

One specimen collected in Vermont and kindly presented by Mr. P. S. Sprague, of Boston.

AGRIOTES, Esch.

A. protractus, n. sp.—Brownish testaceous, opaque, sparsely clothed with greyish yellow pubescence. Form very slender, elongate. Head cribrately punctured, margin of front rounded. Antennæ longer than head and thorax, slender, joint 3 longer than 2, and together scarcely longer than joint 4. Thorax nearly one-half longer than wide, sides in front very feebly arcuate, parallel to base, hind angles acute, divergent and strongly carinate; base at middle with a triangular process in front of the scutellum; surface convex, cribrately punctured, a slight lateral impression on each side at base and median impres-

sion deep in front of triangular process. Elytra slightly broader than the thorax, elongate, gradually narrowed to apex; surface striate, striæ punctured, intervals flat, rugosely punctured. Body beneath darker than above, more shining; sparsely punctured. Legs brownish testaceous. Length .50 inch; 13 mm.

The coxal plates being very narrow externally and the second and third antennal joints together scarcely longer than the fourth, this species should be associated with *oblongicollis*, from which it differs by its greater size, more elongate form and thoracic sculpture. The lateral margin is much less deflexed than is usual in *Agriotes*, and the front flatter The prosternal sutures are very feebly channelled in front.

Two specimens from California.

OXYGONUS, Lec.

O. ater, n. sp.—Black, feebly shining, very sparsely clothed with greyish hairs. Form elongate. Head coarsely, deeply and moderately densely punctured. Antennæ not as long as head and thorax, subserrate, joint 2 shorter than the third, the latter scarcely longer than fourth; joints 4—10 short, as broad as long, subserrate, joint 11 longer than the preceding. Thorax longer than wide, slightly broader behind, sides very feebly arcuate, angles acute very slightly divergent and with a moderately long carina; surface coarsely but sparsely punctured, more shining than the elytra, moderately convex. Elytra as broad at base as thorax, parallel, narrowed and conjointly rounded at apex; surface deeply striate, striæ punctured, intervals moderately convex biseriately punctured and coarsely transversely wrinkled. Body beneath black, feebly shining, deeply punctured and sparsely clothed with grey hairs. Legs black. Length .28 inch; 6 mm.

This species resembles at first glance a Limonius, notably *quercinus*. *Oxygonus* has all the characters of *Corymbites* and differs only in the form of the ungues as shown on Pl. IV, fig. 24 sub.

For the unique in my cabinet I am indebted to Mr. Jas. Behrens, of California, by whom it was collected in Amador Valley, in that state.

CORYMBITES, Esch.

Our species of *Corymbites*, are rapidly increasing in number and seem to require revision and correction. New synoptic tables of this and other genera have been prepared, but their publication has been deferred for a future time, when the tables with synonymy and bibliography will be presented, at such a time when all our accessible new species shall have been described.

The following new species are members of three of our groups which are distinguished as follows.

Antennæ pectinate in the males.....Group. I.
Antennæ simple in both sexes, either serrate or filiform.
Joints 3 and 4 of antennæ similar; that is, not differing in length and rarely in form. Form usually slender.....Group II.
Joint 3 shorter and narrower than the fourth. Form usually broad.Group III.
Joint 3 always distinctly longer than the fourth.....Group IV.

GROUP II.

C. xanthomus, n. sp.—Elongate, sub-depressed. Thorax opaque with very faint tinge of bronze, elytra deep black, feebly shining, with an oval yellow spot on the middle of the base of each elytron. Head coarsely and densely punctured. Thorax one-half longer than broad, anteriorly very feebly emarginate, angles obtuse, sides nearly straight, slightly sinuate at middle and near the hind angles which are acute divergent and not carinate; surface feebly convex densely and rather coarsely punctured, the punctures becoming umbilicate at the sides. Elytra as broad as thorax, sub-depressed, sides feebly rounded, surface finely striate, striæ punctured, interspaces finely punctulate and finely rugose. Body beneath black densely punctulate. Tarsi piceous. Antennæ with second joint small, third of the same form as the fourth and a very little longer. Length .26 inch; 6.5 mm.

Resembles *lobatus* and *tarsalis*, in form, but more depressed and slender than either and may be readily known from all our species by the characters given above. Its position in the series is near the two species above named.

The above specimen was kindly presented to me by Mr. James Behrens, of San Francisco, with the catalogue number 977. It was collected at Crystal Springs, California.

C. Copei, n. sp.—Piceous, with very faint tinge of bronze, hind angles of thorax and small irregular space at apices of elytra, pale testaceous. Head very coarsely punctured. Antennæ slender, piceous, third joint as long as fourth and similar in form, second joint scarcely longer than half the third Thorax slightly longer than broad, and feebly narrowed in front; sides feebly rounded, hind angles acute, carinate and very feebly divergent; disc moderately convex, with feeble median impression, surface with coarse umbilicate punctures closely placed. Elytra as broad as thorax parallel, obtuse at tip, moderately convex, rather deeply striate, striæ punctured, intervals convex irregularly punctured. Body beneath piceous black, shining; sparsely pubescent; thorax very coarsely punctured, pectus and abdomen less coarsely, the latter more sparsely. Legs brownish. Length .48 inch; 12 mm.

Similar in form to *signaticollis*, but should be placed near *teres* and *divaricatus*. Belongs to Group III, Candeze, and may easily be recognised by the characters above given.

One much injured specimen in my cabinet, collected in southern Virginia, by Prof. E. D. Cope, to whom I dedicate it with much pleasure.

GROUP III.

C. monticola, n. sp.—Form elongate, slightly attenuate before and behind

brownish with bright æneous bronze lustre, sparsely clothed with greyish pubescence. Head coarsely punctured, mandibles rufous, black at tip. Antennæ half as long as body, feebly subserrate, third joint longer than the second and the two together equal to, scarcely longer than the fourth. Thorax longer than wide, feebly narrowed in front, sides feebly arcuate, slightly sinuate in front of the hind angles which are slightly divergent, sub-acute and not carinate: surface moderately convex, corsely punctured, median line feebly impressed at base. Elytra slender, more brilliant in color than the thorax, striate, striæ punctured, intervals flat, punctulate and slightly wrinkled. Body beneath black, without metallic lustre, closely punctured, legs rufo-piceous, tibiæ paler. Length .38 inch; 10 mm.

Resembles *tarsalis* and *caricinus*, in form, but must be referred to another group in which the third joint of the antennæ is shorter and narrower than the fourth.

One specimen from the Sierras of California.

C. limoniiformis, n. sp.—Form slender, æneous, clothed with greyish pubescence giving the surface a plumbeous appearance. Head coarsely and deeply but rather sparsely punctured. Thorax longer than wide and narrower in front, sides very feebly rounded, subparallel behind the middle, feebly sinuate near the hind angles which are strongly divergent, acute and feebly carinate; disc moderately convex, median line distinctly impressed behind the middle, surface deeply and rather densely punctured. Elytra as broad as thorax gradually narrower to apex, surface moderately convex, rather deeply striate, striæ punctured, intervals feebly convex and rugosely punctulate. Body beneath darker than above, less distinctly æneous, punctulate and with greyish pubescence. Legs piceous. Antennæ with the third joint shorter and more slender than the following. Length .38 inch; 9.5 mm.

Allied to *divaricatus*, but more slender and with longer thorax, and with a surface more distinctly metallic; also resembles the more slender forms of *cylindriformis*, ♂, the color being, however, darker and its thorax more deeply punctured, differing as well as by its more convex form.

One specimen in the cabinet of Mr. Ulke, from Dacota.

GROUP IV.

C. pruininus, n. sp.—Black, feebly shining, surface sparsely clothed with short grey hairs and consequently pruinose in appearance. Head coarsely punctured, cribrate. Antennæ with third joint longer than the following. Thorax slightly longer than broad, surface convex, densely and rather coarsely punctured, punctures confluent at the sides; apex feebly emarginate, sides in front rounded, feebly sinuate near the hind angles which are acute, feebly divergent and strongly carinate. Elytra as broad as thorax, moderately convex, sides nearly parallel at basal two-thirds then gradually narrower to apex, surface feebly striate, striæ punctured, intervals flat, sparsely but rugosely punctured, but smoother in the basal and scutellar region. Body beneath black sparsely punctulate and clothed with greyish hairs. Legs piceous black. Length .52 inch; 13 mm.

Allied to *conjungens*, Lec., from which it differs in color, size

greater convexity, relatively shorter thorax, color of legs, less shining surface and the pruinose appearance produced by the short grey hairs.

Two specimens are before me, one from Nebraska, in the cabinet of Mr. Ulke, another from California, received from Mr. Behrens, with a catalogue number 808.

C. Breweri, n. sp. —Black, surface darkly bronzed, feebly shining. Head closely and very coarsely punctured. Antennæ with third joint distinctly longer than the fourth. Thorax nearly square, very slightly longer than broad median line slightly impressed at base, not very convex, surface densely and coarsely punctured, punctures denser at the sides in front; sides feebly rounded, near the hind angles distinctly sinuate, angles slightly divergent, prolonged backwards, sub-acute at tip and strongly carinate. Elytra as broad as thorax subparallel in front, surface moderately convex, striate, striæ finely punctured intervals feebly convex, irregularly biseriately punctulate and transversely wrinkled. Body beneath black, shining, sides of prothorax densely and coarsely punctured, prosternum very sparsely punctured, pectus and abdomen sparsely punctulate more densely at the sides. Legs piceous. Length .42 inch; 10.5 mm.

This species belongs to Group VI, Candeze, and is allied to our *splendens* and *conjungens*, differing from the former in its more slender form, less polished surface, and from the latter by its distinctly bronzed surface, more densely punctured thorax and feebly impressed median line. The legs of *conjungens*, are also rufous. The bronze tinge of the surface is very dark and equal on the thorax and elytra.

A few specimens were captured in the high southeastern Sierras east of Visalia, California, by Prof. Brewer, to whom the species is dedicated.

C. praeses, n. sp.—Brownish, feebly shining without metallic lustre, sub-depressed, beneath brownish testaceous, legs and epipleuræ much paler. Head coarsely punctured, sparsely clothed with yellow hairs. Thorax longer than broad, sides feebly rounded and slightly sinuate behind, angles acute prolonged backward, and strongly carinate; disc with median line feebly impressed in its entire length; surface coarsely and rather densely punctured, shining. Elytra as broad as thorax sides feebly rounded, surface feebly convex, striate striæ not punctured, intervals slightly convex biseriately sparsely punctulate. Body beneath densely punctulate except along the median line. Antennæ and parts of mouth (except tips of mandibles) pale yellowish testaceous. Length .40 inch; 10 mm.

Closely allied to *Breweri* and *conjungens*, from both of which it differs in its color, and also from the latter by its longer thorax. In neither of the above cited species are the epipleuræ paler than than the upper surface of the elytra. The striæ appear not to be punctured, the punctures of the interspaces are so near the striæ

that it difficult to say whether the impressions are caused by them or by independent punctures.

This species is represented in Leconte's cabinet by one specimen under the name of *Drasterius praeses*, Cand., to which it cannot be referred either generically on specifically. The coxal plates are very feebly dilated internally and the front not margined, both characters being at variance with Drasterius.

One specimen from Bitter Root Valley, Montana.

C. obversus, n. sp.—Black or piceous, feebly shining. Head cribrately punctured. Antennæ rufous, third joint longer than the fourth. Thorax longer than broad, broader anteriorly than at base, convex; median line moderately impressed, entire; surface coarsely punctured more densely at the sides feebly rounded, gradually narrowing to base, hind angles acute, feebly divergent and carinate. Elytra as broad as thorax at base, elongate oval, humeri broadly rounded; surface moderately convex, striate, intervals convex, punctulate and reticulate. Body beneath as above, densely punctulate and clothed with reddish-yellow hairs. Legs rufous; Length .46 inch; 11.5 mm.

The color of the body is variable. In the two specimens before me the elytra are nearly black, and in one (cabinet Ulke) the thorax is dark brown nearly black and more shining, the other (my cabinet) the thorax is reddish-brown and opaque. In both the legs are red, and the under surface agrees in color with the corresponding portion of the upper surface. It is allied to *conjungens*, but is more convex in all its parts and the thorax larger in comparison with the elytra, the latter being more distinctly oval than any species in our fauna. The surface is sparsely clothed with short reddish-yellow hairs of a deciduous character.

Two specimens from near the western base of the Sierra Nevada, of California.

C. nebraskensis, Bland, Proc. Ent. Soc. Phil. I, 355.=**C. triundulatus.** Rand.

The typical specimen described as above cited has been carefully examined with the result indicated. The elytra are described as reddish yellow which is true, but there are faint traces of the three undulated bands, enough however to indicate their position which corresponds exactly with that seen in the more developed form. The specimen is also scarcely matured and the legs are fuscous and the antennæ paler than in perfect specimens. In every other respect the type agrees with the normal specimens of *triundulatus*, Rand., now before me.

C. nigricollis, Bland, Proc. Ent. Soc. Phil. III, 68.

Belongs to the same group with the preceding, (Sec. V, Cand.)

and differs from all our species by its longer and more densely punctured thorax and more distinctly carinate hind angles. The elytra are similar in color to *medianus*, Germ., and have a darker oblique spot at the basal fourth, extending from striæ 2—8, emarginate in front and convex behind; at the middle is another transverse band having the form on both elytra together of a brace ⁀ gradually fading behind into the color of the surface.

C. divericolor, Esch. Thon. Archiv. II, 1, p. 34.=**rotundicollis**, Say.

By a specimen kindly loaned me by Mr. H. Ulke, I am enabled to state definitely what Candeze hinted at, (Monograph Elat. IV, p. 180). There is no appreciable difference between our eastern specimens and that from California, except that the latter is rather more shining.

C. morulus, Lec. New Species, p. 85.

There is in Mr. Ulke's, cabinet a variety of this species in which the sides of the thorax are broadly rufous as in *lateralis*, Lec., in which however the hind angles are black. I cannot find any specific character warranting its separation from the totally black forms. *Morulus* resembles *tinctus*, Lec., and in the well preserved specimens in Mr. Ulke's cabinet there is a very faint metallic tinge to the elytra and the intervals in all the specimens before me are reticulate but less distinctly than in *tinctus*. The third joint of the antennæ is very slightly shorter than the fourth otherwise the two species might be placed side by side.

C. carbo, Lec. Trans. Am. Phil. Soc. X, p. 14.=*C. lateralis*, Lec. loc. cit. p. 15.

The same variation occurs here as noted in the preceding species. The only points in which the two are said to differ are, that the sides of the thorax are rufous in *lateralis*, the median impressed line entire and the striæ less deeply punctured. These are all evanescent characters in the specimens before me with one from the cabinet of Mr. Ulke, the series is complete.

C. cruciatus, Linn.=*festivus*, Lec. =*pulcher*, Lec.

I introduce this species for the purpose of noting one of the most curious varieties that has ever come under my notice in the genus. The elytra of *cruciatus*, as has been beautifully illustrated by Duval, are of a bright yellow color with a narrow black sutural stripe broader at the scutellum, and two short humeral stripes parallel with the sutural; at the beginning of the apical third of the elytra a transverse

band crosses, becoming broader externally. In the variety before me which may be known as *Edwardsi*, the elytra are totally black excepting a brownish yellow spot at the middle of the base of each elytron, and the epipleuræ brownish testaceous. In every other respect the two forms *entirely* agree and I therefore feel unwilling to consider it a distinct species.

PLATE III.

FIGURE I. Anterior tibia of **Aphodius.**
" 2. Anterior tibia of **Dialytes.**
" 3. Anterior tibia of **Aphodius** ♂, Sect. I, B.
" 4. Anterior tibia of " ♀, "
" 5. Hind tibia of " ♂, "
" 6. Middle tibia of " ♂, "
" 7. Middle tibia of " ♀, "
" 8. **Aphodius pinguis**, Hald. ♂, "
" 9. Anterior tibia of **Aphodius oblongus**, ♂, Say.
" 10. Anterior tibia of " **phalerioides**, Horn.
" 11. Anterior tibia of " **Walshii**, ♂, Horn.
" 12. Middle tibia with equal spinules.
" 13. Middle tibia with unequal spinules.
" 14. Middle tibia of **Aphodius concavus**, ♂, Say.
" 15. Middle tibia of " **dentiger**, ♂, Lec.
" 16. Head, from above, of **Aphodius nevadensis**, Horn.
" 17. Head, from above, of " **torpidus**, Horn.
" 18. Head, from above, of " **denticulatus**, Hald.
" 19. Head, from above, of " **crassulus**, Horn.
" 20. Elytral markings of " **inquinatus**, Fab.
" 21. Elytral markings of " **pardalis**, Lec.
" 22. Elytral markings of " **serval**, Say.
The elytra of 20—21—22 are yellow with black markings.
" 23. Elytral markings of **Aphodius rugifrons**, Horn.
The elytra are here black with spots yellow.
" 24. Anterior tibia and tarsus of **Cremastochilus planatus**, Lec.
" 25. Hind tibia and tarsus of " **schaumii**, Lec.
" 26. Anterior tibia and tarsus of " "
" 27. Anterior tibia and tarsus of " **nitens**, Lec.
" 28. Mandible of **Cotalpa ursina** Horn, from above; *a*, front view.
" 29. Mandible of " **granicollis**, Hald., from above; *a*, front view.
" 30. Mandible of " **consobrina**, Horn, from above; *a*, front view; *b*, tarsus.
" 31. Mandible of " **lanigera**, Linn., from above; *a*, front view *b*, tarsus.
" 32. Anterior tibia ♂, of **Cyclocephala puberula**, **nigricollis** and **seditiosa**.
" 33. Anterior tibia ♂, of " **immaculata**, etc.
" 34. Anterior tibia ♂, of " **elegans**, Horn.

Descriptions of new COLEOPTERA of the United States, with notes on known species.

BY GEO. H. HORN, M. D.

CICINDELA, Linn.

C. puritana, n. sp.—Elongate, brownish æneous. Head and thorax sparsely pilose with white hairs. Labrum white, rounded in front with angles obtuse but moderately prominent, occiput punctured and finely rugulose, vertex finely strigose. Thorax slightly broader than long, sides feebly rounded, apical, basal and median grooves moderate. Elytra parallel, twice as broad as long; a median basal white spot, lateral margin narrowly bordered with white, with oblique subhumeral branch suddenly mucronate at tip, a median slightly sigmoid fascia, somewhat confused at middle, and an oblique short subapical lunule. Surface moderately densely punctured.

Male.—Elytra near apical, three fourths distinctly sinuate and obliquely narrowed to tip which is moderately prominent, distinctly serrulate and spinulose at suture.

Female.—Elytra at three fourths deeply sinuate and with a strong acute tooth, obliquely narrowed to apex which is finely serrulate, sub-truncate and at suture slightly prominent. Body beneath smooth shining, sparsely pilose, and with metallic bluish-green lustre. Trochanters rufous, femora cupreo-æneous, tibiæ reddish testaceous bluish at tip. Tarsal joints at proximal end reddish testaceous. Length .46 inch; 11.5 mm.

This species must be referred to the group with *cuprascens*, *macra*, etc. It has exactly the color of the latter species and also the markings except that the median band is less sinuous. It differs also in having the ♀ somewhat broader and less parallel, and the elytral sculpture rather coarser, the sinuation of the elytra deeper and the tooth stronger and more acute in ♀ and more decidedly truncate at apex. The thorax in *macra*, is longer than broad and in the present species slightly broader than long; *cuprascens*, differs primarily in color and the female has the sutural angle at apex distinctly retracted and the male has the apical margin serrulate to the sinuation while the present species the margin is serrulate near the sutural margin only. From the above comparisons it will be seen that the species occupies an intermediate position to the two above cited, having the color and sculpture of one and the sexual characters very nearly of the other.

Specimens were collected in southern New Hampshire and at Springfield Massachusetts, and sent me by Mr. S. Henshaw of Boston.

CHLÆNIUS, Bonelli.

C. viduus, n. sp.—Head oval, black with a slight tinge of purple, coarsely punctured more densely over the eyes and with a broad impunctured space from the vertex to the front. Antennæ deep black, basal joint reddish-yellow. Parts of mouth deep black. Thorax black with tinge of purple, densely and rather coarsely punctured, median line finely impressed, basal impressions

small, faint; as broad at base as long, at apex scarcely a third narrower, sides gradually rounded and slightly broader behind the middle and very slightly narrowed to the basal angles which are obtuse. Elytra slightly broader behind the middle, somewhat broader at base than the thorax and obtuse at apex; color black, at margin slightly purple; surface sparsely clothed with fine, short, ferruginous hairs, finely striate, striæ with distant punctures, intervals densely punctato-granulate. Body beneath black, shining, sparsely punctured. Femora reddish-yellow sparsely punctured, coxæ and trochanters black, hind trochanters at base only blackish. Tibiæ and tarsi deep black with a slight tinge purple. Length .68 ♁ inch; 15.5—17 mm.

This species approaches *laticollis*, in color and general aspect and *augustus*, in form of thorax. It differs from all our species in the black antennæ and trophi and the femora and tibiæ being of dissimilar color. The elytral striæ are finer than in *laticollis*, but the granules rather coarser. The thorax is rather more finely punctured, at least not so apt to become confluent.

For an opportunity of examining this species I am indebted to Dr. S. V. Summers, of St. Louis, who kindly placed one at my disposal. It is very rare, only two specimens being known, taken in high sandy places in Missouri probably near St. Louis.

C. orbus, n. sp.—Color black, opaque with very faint tinge of purple. Body beneath black, more shining and faintly bluish-iridescent. Legs black. Head moderate, oval; occiput sparsely punctured vertical and frontal regions smooth, at the sides sparsely punctured and with longitudinal furrows very indistinct: color black with distinct purple tinge. Antennæ piceous at base becoming brownish toward the tip; palpi piceous, at articulations and tip of last joint piceo-rufous. Thorax nearly flat moderately convex across the apex, base about one-tenth broader than the length, apex nearly one-third narrower than the base. Sides moderately rounded, broadest slightly behind the middle and then scarcely narrowed to base, hind angles obtuse. Surface evenly punctured punctures rather coarse and not densely placed, median sulcus faint, abbreviated at either end, basal impressions shallow but extending one-third the length of thorax. Elytra oval broadest at middle, length to breadth as one and a half is to one; color black, very sparsely clothed with short brownish hairs; striæ fine but with rather large punctures placed at a distance from each other nearly equal to half the width of an interspace; interspaces sparsely and finely punctulate. Body beneath black shining, parapleuræ sparsely punctured, sterna smoother; abdomen with very sparse punctures and slightly wrinkled. Legs black shining, femora nearly smooth. Length .65—.68 inch; 16—17 mm.

Occurs in central and western Texas probably also in the adjoining regions of Mexico.

Resembles in form *rufipes* var. *brevicollis*, very accurately, while its sculpture (excepting the coarser punctures of the striæ) is very nearly that of *fusicornis*.

This species has been a long time in our cabinets and I have, until

the present, hesitated to name it. I cannot find any description fitting it in Chaudoir, Dejean or Chevrolat nor any American species either North or South, to which reference is made in the Catalogue of Gemminger and Harold, with which it agrees.

C. alternatus, n. sp.—Black, feebly shining, head and thorax with a slight reddish bronze; beneath and legs black. Head shining with slightly metallic reddish bronze, impunctured and slightly wrinkled, longitudinal impressions deeper in front; antennæ and parts of mouth black. Thorax one-fourth wider at base than long, at apex narrower than the length, sides moderately rounded and slightly narrowing at base; a median broad but shallow sulcus, containing the median fine line, on each side of which is a row of very coarse punctures extending to the anterior margin; basal impressions broad densely and coarsely granulately punctured and with a few short hairs; surface between median sulcus and margin with a few large irregularly placed punctures; lateral margin slightly explanate and reflexed, with coarse punctures; color of thorax reddish bronze with a tinge of green in the impressions. Elytra broadly oval, depressed, black sub-opaque, striæ replaced by rows of very coarse punctures, interspaces moderately convex, the third, fifth and seventh more distinctly elevated, surface densely and rather coarsely granulately punctured clothed with short, inconspicuous, brownish pubescence. Body beneath black shining, parapleuræ and abdomen sparsely punctured, the latter also sparsely pubescent. Legs black, femora with a few punctures with short setæ. Length .50 inch; 12.5 mm.

This species reproduces the form of *niger* but has rather broader elytra and differs from that species by so many characters that it is not worth while to recapitulate them.

One specimen is before me obtained by Dr. Leconte, from the British Museum in exchange. Collected by Mr. Bourgeau, in the Sackatchewan region.

ANOPHTHALMUS, Sturm.

A. tenuis, n. sp.—Pale rufo-testaceous, shining. Head slightly darker in color, oval, and arcuately biimpressed. Thorax broader than the head, slightly longer than broad and sinuately narrowing to hind angles which are exactly rectangular; median line distinctly impressed in its entire length, basal impression deep; base of thorax truncate. Elytra elongate oval, feebly convex, at base slightly flattened; two-thirds longer than broad, humeri obtusely rounded; surface with feeble traces of striæ and three dorsal setigerous punctures on each elytron, in or nearest to the position of the third stria. Body beneath similar in color to the upper surface, legs somewhat paler. Length .18—.24 inch; 4.5—6 mm.

Three specimens of this species were collected by Prof. E. D. Cope, one of the most untiring explorers of the caves of our country, in Wyandotte Cave in Southern Indiana.

This species is closely allied to *Menetriesi*, Motsch (*angulatus*, Lec.) but differs by its more elongate and less robust form and less convex surface. The elytra are smoother and with very feeble traces of striæ.

The two species differ especially in the form of the hinder thoracic angles and base of thorax. In *Menetriesi*, the angles are acute, slightly prominent externally and the base of the thorax slightly prolonged, while in the present species the angles are strictly rectangular and the base truncate. This species must be placed near the one just cited in my table of our species (Trans. Ent. Soc. Phil. 1868, p. 126) in which however a clerical error occurs, in the first line the word "elytra" should be used for "thorax". Two species have been described by by Motschulsky that have not been recognised in this country *striatus* and *ventricosus*, (Etudes Entom. 1862, pp. 41, 42) both are small species, the former with deeply punctured striæ and the latter with faintly punctured striæ, both have the hind thoracic angles rectangular and in the first species slightly produced.

The new species above described is the most slender in form of any in our cabinets.

A. eremita, n. sp.—Pale rufo-testaceous feebly shining. Head oval, arcuately biimpressed impressions moderately deep, intervening space feebly convex. Thorax wider at widest portion than long, sides moderately rounded in front gradually narrowed to base hind angles rectangular, base truncate and as wide as length of thorax; disc feebly convex, median line distinctly impressed, basal transverse impression moderate. Elytra oval, less shining than thorax and sparsely clothed with very short erect pubescence; striæ obsolete; three dorsal punctures on the line of the third stria. Length .20 inch; 5 mm.

One specimen of this species was collected with preceding in Wyandotte Cave, by Prof. Cope.

The only species with which it might be confounded is that previously described by me under the name *pusio*, and although differing very notably on comparison in their general aspect, the points of difference are not easily made plain in a description. The present species is in all respects broader and less depressed without being convex as in *Menetriesi;* the thorax is broader, less narrowed behind and the sides more rounded. The elytra are less shining and the pubescence more distinct although in both species the pubescence can only be observed by holding the specimen between the eye and the light and then only with a good power. In the three species at the head of the accompanying table, no signs whatever of pubescence can be observed The elytral striæ are here also entirely obliterated, faint traces are discernible only at the base. The basal margin is not prolonged. The few remarks on the comparison of *tenuis* with the two as yet unknown species described by Motschulsky apply equally to this one.

Independently of the characters noted in a preceding short review (Trans. 1868, p. 126) others, probably more important may be found to distinguish our species.

Penultimate joint of maxillary palpi longer than the last joint.
Base of elytra obliquely prolonged; thorax much longer than wide, hind angles rectangular, base truncate; body glabrous.....**Tellkampfi.**
Penultimate joint equal to last or even slightly shorter.
Elytra shining not pubescent; thorax longer than wide.
Hind angles of thorax strictly rectangular, base squarely truncate. Elytra elongate oval, feebly convex, striæ obsolete. Form slender.....**tenuis.**
Hind angles acute, slightly prominent, base distinctly prolonged at middle.
Elytra broadly oval, more convex, striæ moderately deep and punctured. Form robust.....**Menetriesi.**
Elytra sub-opaque, distinctly pubescent; thorax as wide or wider than long. Elytral base never obliquely prolonged.
Sides of thorax gradually narrowing to base, scarcely sinuate, hind angles rectangular or nearly so but never acute and prominent.
Thorax at base as wide as long.....**eremita.**
Thorax at base narrower than long; at widest portion not wider than long.....**pusio.**
Sides of thorax sinuately narrowing to base, hind angles acute prominent outwardly. Elytra very distinctly pubescent....**pubescens.**

SUPHIS, Aubé.

S. lineatus, n. sp.—Elongate oval, more obtuse in front; color dark yellowish testaceous, shining, each elytron with four black vittæ. Head, yellowish smooth impunctured, with darker space at occiput. Thorax more than twice as broad at base as long, yellowish with darker discal space and with a sinuous row of moderate punctures in front of basal margin behind which are smaller ones sparsely placed. Elytra convex gradually narrowed to apex, yellowish, with seven stripes on the elytra conjointly, as follows; a common sutural stripe extending from apex to base, a second extending from the base becoming slightly arcuate near its end joining the sutural a short distance from the apex, a third extending from base two-thirds the length of the elytra, a fourth near the margin starting at the first third and nearly attaining the apex, and usually also a small linear spot in the humeral region; surface coarsely but sparsely punctured, punctures irregularly arranged, and with an indistinct row of coarser punctures near the outer edge of the second black stripe and parallel with but somewhat distant from the basal margin. Body beneath piceo-testaceous, shining, penultimate and preceding segment of abdomen with a transverse line of coarse punctures. The sternal plate coarsely punctured especially in front. Length .12 inch; 3 mm.

Rather more elongate than *bicolor* and transversely more convex. Easily known by its coloration.

Specimens were sent me from Cape San Lucas, Lower California, and were collected by Mr. Wm. M. Gabb.

LACCOPHILUS, Leach.

L. quadrilineatus, n. sp.—Elongate oval, more obtuse in front; color pale yellowish testaceous, elytra at apex pellucid, and slightly obliquely rounded. Head pale testaceous. Thorax similar in color slightly sinuate at base on each side and at middle obtusely prolonged. Elytra pale testaceous, suture narrowly margined with black not attaining the apex, disc with four black lines on each elytron near the suture not attaining the apex and interrupted behind the middle by a large irregular black patch with a small lobe extending from its outer distal angle toward the margin. Body beneath darker than the upper surface, legs very pale testaceous. Length .24 inch; 6 mm.

This is the only species known to me from the American continent with the ornamentation consisting of black lines.

Specimens were purchased by me from G. W. Belfrage, who collected them in central Texas.

Laccophilus pictus, Cast., was also collected in the same region as the *Suphis*, and others have been sent me from Texas. The species should therefore be added to our list.

COLYMBETES, Clairv.

C. inæqualis, n. sp.—Elongate oval, broader behind the middle. Head black with vertical rufous spot, and anterior margin pale yellow, very finely and densely punctured. Thorax yellowish or brownish with median transverse band and narrow margin at middle of base black, surface intricately and confluently lined and in the intervals punctured, lines obsolete at margin which is densely and finely punctured with a few coarser punctures intermixed. Elytra brownish sometimes paler, margin paler than disc; surface sculptured with transverse lines more deeply graven at the basal two-thirds in which region the surface is sub-opaque from the intervals between the lines being scabrous; apical third more shining. Body beneath black shining, surface finely transversely strigose, strigæ becoming longitudinal at the first two abdominal segments and at the sides of the others, and at the middle of the segments the lines are nearly transverse but very distantly placed. Legs pale, femora piceous; legs sometimes entirely black. Length .66—.70 inch; 16.5—17.5 mm.

There can be no difficulty in distinguishing this species from all the others by the peculiar sculpture. Not only are the transverse lines at basal two-thirds deeper but they are closer together than those at the apex. In *exaratus* the lines at base are rather deeper than those at apex but they are equally distant, and the intervals are not roughened on top as in the present species. Its position in the series is near *longulus*.

Occurs in north eastern California and Oregon.

Colymbetes (*Scutopterus*) *coriaceus*, Cast., has been collected by Mr. Johnson Pettit, at Grimsby, Canada, and both male and female specimens placed in my cabinet.

HYDROPHILUS, * Geoffr.

H. quadristriatus, n. sp.—Elongate oval, more attenuate in front, black with slight olivaceous tinge; surface densely, finely and equally punctured. Head with sigmoid of row coarser punctures on each side, meeting at the vertex. Antennæ and palpi testaceous. Thorax with a small fovea on each side near the anterior margin within the position of the eyes, and an angulate row of punctures on each side near the middle and a few coarse punctures irregularly disposed. Elytra with four striæ of moderate punctures, two striæ sutural, extending nearly from base to apex, enclosing at base a short scutellar row; two striæ subhumeral obliterated at base and extending nearly to apex, becoming confused and extending toward the inner rows. Body beneath black, opaque and pubescent, abdomen with a row of brownish patches at the sides. Legs pale testaceous, femora at base and tarsi black. Length .38 inch; 9.5 mm.

Resembles *lateralis* in form but is more narrowed before than behind. The elytra are evenly punctured and the body along the median line moderately convex. It differs from all our species by the four striæ of punctures on each elytron. The outer two rows correspond with an eighth and ninth while traces of a third, fourth and fifth are evident at base.

Collected by Prof. Verrill, near the sea coast of New Jersey.

PHYTOSUS, Curtis.

P. littoralis, n. sp.—Head brownish testaceous, moderately shining, sparsely clothed with yellowish hairs, front feebly concave; parts of mouth and antennæ testaceous, the latter darker at tips. Thorax paler than the head, as broad as long, disc depressed, sides strongly rounded in front, behind the middle sinuate, base truncate feebly emarginate at middle, and slightly broader than half the width of thorax at middle; surface sparsely punctured and pubescent. Elytra pale testaceous, sparsely punctured and pubescent, short, sides strongly divergent behind, body apterous. Abdomen elongate oval broader behind the middle, shining and very sparsely pubescent. Legs pale testaceous. Last segment of abdomen ♂ slightly prolonged at middle, and sinuate on each side. Length .08 inch; 2 mm.

The male resembles in its sexual characters *P. balticus*, Kraatz, but the median prolongation of the last abdominal segment is broader. The penultimate segment is subcarinate along the median line posteriorly. The mandibles are more prominent than in our California species.

One specimen collected by Prof. A. S. Verrill, on the sea coast of New Jersey.

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* Note.—This and the next species were obtained from a small collection made on the Jersey coast and descriptions and a list of the other species prepared for Prof. Verrill. Owing to the delay in publication and desirability of keeping descriptions of new species close together and not widely scattered in many journals, permission has been obtained to present them in these Transactions.

QUEDIUS, Leach.

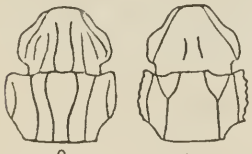
Q. spelæus, n. sp.—Pale rufo-testaceous shining. Head broadly oval, smooth shining slightly impressed between the eyes in front; two punctures bearing short setæ in front of the eyes, another at the side of vertex, two at the side of head behind, hind angle of head slightly pubescent. Eyes not large, nearly round and prominent. Antennæ moderately stout, one-half longer than the head, first joint nearly as long as the second and third together, the third one-half longer than the second; joints 4—10 gradually but feebly stouter, cylindrical and scarcely longer than wide, joint 11 longer than the preceding and sub-acute at tip. Thorax slightly broader than the elytra, sides distinctly explanate, broader than long, emarginate in front anterior angles subacute, sides and base broadly rounded forming nearly a circle less the emargination in front; surface smooth shining and with punctures arranged as follows: a dorsal series of two punctures moderately distant from the anterior margin, a lateral oblique series of three or four punctures, one puncture being within the line of the lateral but not belonging to the dorsal series; a marginal row of moderately large punctures close to the lateral margin extending along the base, the punctures being more distant in the latter region. Prosternal process behind the coxæ corneous. Scutellum smooth shining. Elytra slightly longer than the thorax, rather densely and moderately coarsely punctured and sparsely clothed with short yellowish pubescence. Abdomen moderately elongate, longer than the head, thorax and elytra together, slightly narrowed to apex, moderately punctured but less densely than the elytra, above and beneath sparsely clothed with brownish hairs. Body beneath and legs similar in color to the upper surface. Length .46—.50 inch; 11.5—12.5 mm.

Abundantly distinct from all our species by the color and thoracic punctures. The sides of thorax are more explanate than any of our species except *explanatus*, Lec.

Two specimens were collected by Prof. E. D. Cope, a short distance within the mouth of Wyandotte Cave in southern Indiana.

GLYPTOMA, Er.

G. brevicristatum, n. sp.—Brownish, opaque. Head in front hemihexagonal sides slightly arcuate; with two short carinæ on the vertex and a slight carina extending from the hind angle of the head, close to the margin, obliquely inwards and forwards to the frontal margin. Thorax broader than long, disc bicostate, costæ distant and bifurcate at apical margin; near the sides two costæ, the inner extending, from anterior margin and joining the side one fifth from apex the outer carina nearer the margin and short; sides of thorax straight, suddenly sinuate at base, anterior angles moderately prominent, margin slightly crenulate. Elytra subquadrate, disc five costate, the second costa faint; interspaces finely granulose. Abdomen opaque. Body beneath less opaque. Legs ferruginous brown. Length .10 inch; 2.5 mm.



Resembles our common *costale*, but differs in the sculpture of the

head and thorax. In the cut the outer short carina of thorax is accidentally omitted.

One specimen collected by myself at Camp Grant, Arizona. In the accompanying cut, fig. 1, is *G. brevicristatum*, and fig. 2, *G. costale*.

Pseudopsis sulcatus, Nm. Specimens of this species have been taken rather abundantly near Grimsby, Ontario, by Mr. Johnson Pettit. On comparison of these with a type from England I find no specific differences.

SAPRINUS, Er.

S. æneipunctatus, n. sp.—Black opaque. Form short robust. Head retracted, front with few punctures, transverse ridge faint. Thorax twice as broad as long, sides feebly rounded and gradually narrowed anteriorly; surface densely punctured at the sides, smoother and less densely punctured at middle. Elytra very densely and coarsely punctured over the entire surface, humeri with small smooth space; punctures brilliantly æneous at bottom. Striæ almost entirely obliterated, the first dorsal long, second, third and fourth very short, the latter united by faint arch with the nearly obsolete sutural; humeral stria nearly obsolete, one subhumeral moderately distinct. Anterior tibiæ five dentate, the lower three teeth strong; hind tibiæ triseriately strongly spinulose. Prosternum acutely carinate. Body beneath black shining, coarsely punctured at the sides, smoother at middle. Pygidium convex, densely punctured and nearly vertical. Femora smooth. Length .12 inch; breadth .10 inch; .3—2.5 mm.

This species must be referred to Marseul's group V, and Leconte's group 9 near *patruelis* and *lucidulus*. It resembles in form a miniature *sulcifrons*, and is more coarsely and densely punctured than any species in our fauna. Resembles also *bigemmeus*, Lec., but may be readily known by the compresso-carinate prosternum and the absence of the well defined small scutellar spaces of that species, although some specimens of *æneipunctatus*, have scutellar spaces slightly more convex than the rest of the surface and somewhat smoother, although punctured and rugose.

Several specimens presented by Mr. James Behrens; from the sea coast near San Francisco.

OTHNIUS, Lec.

The above genus was founded by Leconte and indicated as a distinct family, Class. Col. N. A. p. 102, at the same time briefly describing one species and indicating a second from memory. Since then two others have been described in our fauna, as follows:

O. fasciatus, Bland. Proc. Ent. Soc. 1861, 253. Virginia.

O. lugubris, Horn, Trans. Ent. Soc. 1868, 132. Oregon and also

O. mexicanus, Horn, loc. cit. 133, from Mexico.

Previously however Mr. Pascoe, described a genus under the name

Elacatis, founded on a species from Borneo to which the appropriate name *delusa* was given, and referred to the family Melandryidæ in consequence of its heteromerous tarsi. In the Annals and Magazine of Natural History, for 1871, Mr. Pascoe has corrected the error apparently at the suggestion of Dr. Leconte. An examination of all the specimens before me shows the tarsi to be heteromerous in both sexes.

The generic name suggested by Pascoe has priority and must be adopted.

The following species is new.

E. longicornis, n. sp.—Dark brownish testaceous, shining, sparsely clothed with greyish hairs. Form moderately elongate, subdepressed parallel. Head large, densely punctured, darker in color than the rest of the body. Antennæ as long as half the body, slender, scarcely clavate, joints gradually broader to tip; third joint very long, as long as the three following together; color yellowish. Thorax slightly broader than long, sides parallel in front sinuate near base, hind angles slightly prominent, margin rounded, sub-acute only near the base; surface moderately punctured. Elytra brownish, paler than the thorax ornamented with irregularly placed pale spots; surface punctured rather closely but irregularly. Body beneath piceous shining, sparsely punctulate. Length .12 ♂—.18 ♀ inch; 3—4.5 mm.

Differs from all our species by the unusually long and very feebly clavate antennæ. In the male only do the last three joints exhibit any increase of size over the preceding and then very faintly. The form of body is nearly that of *fasciatus* and is much less elongate than any of our other species. There is a possibility that this species may be identical with the one for which the name *guttulatus*, Lec. was suggested.

Two specimens from near Fort Yuma, California.

BRADYCINETUS n. g.

This name is suggested in place of *Amechanus* (preoccupied in the Cerambycidæ), Trans. Am. Ent. Soc. 1870, 48, including our species long known under the name of *Athyreus*.

CYCLOCEPHALA, Latr.

There is hardly a genus among our Lamellicorn beetles presenting species more closely allied in all their prominent specific characters. The difficulty of naming any of our forms from the descriptions at hand as well as with the various tables presented, has prompted me to seek new, more definite and less comparative characters. I believe all the species in our fauna to be hairy when fresh, consequently this means of grouping them is of no value, while the form of the clypeus although differing among the species, does not present that

range of variation affording an exact means of description. The following table is presented prepared from a study of my own and Leconte's specimens. The determinations of the species are those made by Leconte and the names in all cases refer to the same species intended by him in "New Species", p. 79.

Antennæ 9-jointed.
  Anterior claw ♂ slightly cleft behind tip; palpi not impressed.....**manca.**
Antennæ 10 jointed.
  Anterior claw ♂ not cleft.
    Prosternum in front compressed, acute at summit; palpi impressed.....**seditiosa.**
    Prosternum convex not carinate.
      Last joint of maxillary palpus impressed .....**puberula.**
      Last joint of maxillary palpus cylindrical not impressed....**nigricollis.**
  Anterior claw ♂ cleft sometimes very slightly.
    Antennal club ♂ shorter than the others joints together.
      Pygidium sparsely punctured, hairs short..... **immaculata.**
      Pygidium coarsely punctured, rugulose, hairs long.....**hirta.**
    Antennal club ♂ longer than the other joints taken together.
      Last joint of maxillary palpus cylindrical.....**villosa.**
      Last joint of maxillary palpus fusiform.....**longula.**
  Anterior claw ♂ deeply divided.....**elegans.**

The above table is founded on the sexual characters of the male primarily. It is nearly impossible to prepare a table of any value for the other sex. The females are readily known by all their claws being similar and the spurs of the hind tibiæ shorter, broader and stouter than the male.

C. manca, Lec. Proc. Acad. 1866, p. 382.

In addition to the characters given by Leconte, the mentum and ligula are broadly and deeply grooved at middle, the latter deeply emarginate in front and the angles prominent and divergent. The anterior claw of front tarsus of ♂ is thick and distinctly cleft behind its tip and on the posterior edge. It is our largest species and may form a new genus.

C. seditiosa, Lec. New Species, p. 79.

This is one of our most elongate species, and may be known by the anterior claw not cleft and the prosternum in front of coxæ strongly compressed and acute at summit. The last joint of maxillary palpus is distinctly impressed. The upper tibial teeth of the anterior pair are very short and obtuse. The antennal club is long and equals all the other joints taken together. The clypeus is nearly smooth.

C. puberula. Lec. New Species, p. 80.

Resembles a Melolonthide of the Trichesthes group, and is our smallest species. The anterior ♂ spur is proportionately more slender than in most of our species. The prosternum in front of coxæ is broadly convex and punctured and not carinate as in the preceding species. Antennal club long.

C. nigricollis, Burm. Handbuch, V, p. 50; *robusta,* Lec. New Species, p. 79.

The synonymy has been determined by types sent me by Dr. Leconte from Europe. It is the only one of our species in which the elytra are brownish testaceous. The type of *robusta* is rather broader than the other specimens and the difference is probably owing to the specimen having been accidentally flattened. The antennal club is here also long and the last joint of maxillary palpus with but the merest trace of an impression so distinctly visible in the preceding. No difficulty need be found in distinguishing the three species forming this sub-group.

C. immaculata, Oliv. (Melolontha) Ent. I, 5, p. 29, pl. 8, fig. 95; Burm. (Cyclocephala) Handb. V, p. 53; *nigrifrons,* Panzer (Melolontha) Faun. Am. Bor. Prod. 1794; *lurida,* Bland. Proc. Ent. Soc. 1863, p. 354.

This is our most abundant and widely diffused species and is found from Illinois westward and southward extending even to Arizona and Mexico. It is consequently variable, those from the Texas region being broader and more robust and usually with a more decided surface sculpture. This species is very closely allied to the following but may be known by the pygidium being more feeble punctured and the hairs very short. The hairs of the surface, when the specimen is fresh, are also shorter and much less abundant. In *immaculata,* the last joint of maxillary palpus is very feebly impressed and the posterior elevations of the prosternum distinctly visible when viewed from the front.

C. hirta, Lec. Proc. Acad. 1861, p. 346.

The prosternal elevation behind the coxæ is much shorter and more obtuse at tip than the preceding species and scarcely visible when viewed from in front. The maxillary palpi have the last joint feebly impressed. This species is widely distributed in California. The specimens from the region of Fort Yuma are more elongate and the hairs more deciduous.

C. villosa, Burm. Handb. V, p. 54.

Closely allied to the preceding. The male has the antennal club

longer than all the other joints taken together and last joint of maxillary palpus feebly impressed and nearly cylindrical. Harold (Catalogus, 1241) place this species in synonymy with *Melolontha angularis* Knoch. Neue. Beitr. I, p. 89. The description does not seem to be applicable to our species.

C. longula, Lec. New Species, p. 79.

This is our most elongate species and has the eyes more convex and apparently larger than any other in our fauna. The antennal club is much longer than all the other joints taken together, and the last joint of maxillary palpus fusiform and rather deeply impressed. The prosternum in front of coxæ is compressed but less acutely carinate than in *seditiosa*.

C. elegans, n. sp.—Moderately elongate, rufo-castaneous, elytra yellowish testaceous. Head sparsely punctured feet black clypeus hemi-hexagonal brownish, nearly truncate in front, anterior angles obtusely rounded, sides slightly arcuate, margins feebly reflexed. Thorax sparsely punctured, sides moderately rounded and gradually broader to base, hind angles broadly rounded color rufo-castaneous. Elytra yellow testaceous, with coarse punctures arranged in nearly regular rows. Body beneath and legs castaneous. Posterior prosternal protuberance distinctly visible, obtuse at tip and transversely emarginate, prosternum in front compressed not acutely carinate. Antennal club short, last joint of maxillary palpus fusiform and impressed. Anterior claw of anterior tarsus ♂ deeply divided, the portions widely divergent. Length .46 ♂—.54 ♀ inch; 11.5—13.5 mm.

Two specimens from Lower California and one from Indian Territory. Abundantly distinct from all our species in its color and the form of the anterior tarsal claw.

COTALPA, Burm.

C. consobrina, n. sp.—Sides of thorax more feebly arcuate and slightly explanate at hind angles margin broader and more distinctly reflexed. Elytra relatively longer and less rounded on the sides. Mandibles with a broad tooth beneath from the middle of the free edge in front. Tarsi ♂ very stout, anterior tarsi with joints broader than long, the first joint not longer than the second, last joint finely strigose at lower margin. Apical tooth of anterior tibiæ short. Length .78—.90 inch: 20—23 mm.

Closely allied to *lanigera*, in color and sculpture but more elongate and less robust.

All our species (*puncticollis*, Lec. is not before me) have the mandibles laminiform and the tarsal joints longer than wide and the first joint as long as the two following. The present species has the mentum broadly rounded in front and in all the others it is emarginate and in *granicollis* deeply impressed.

Occurs at Fort Whipple, Arizona.

Since the publication of *Cotalpa ursina*, (Trans. Ent. Soc. 1867, 158) and the accompanying table of our species I have found that the characters therein made use of are not by any means constant and therefore not to be relied on in separating the species. The mandibles when widely opened afford a more certain indication than any other organ, as may be seen in the following table.

Mandible nearly straight on outer side (pl. III, fig. 30.)
Mandible with triangular lobe beneath (fig. 30, *a*); body of uniform yellowish color; thorax faintly punctured.....**consobrina**, Horn.
Mandible broadly rounded on outer edge (figs. 28, 29, 31.)
Mentum nearly flat, very feebly emarginate in front.
Mandible faintly toothed within (fig. 31); thorax sparsely punctured and similar in color with the elytra, yellow.....**lanigera**, Linn.
Mandible with long tooth within (fig. 28) thorax coarsely punctured and bluish-black; elytra reddish-yellow.....**ursina**, Horn.
Mentum concave in front and deeply emarginate.
Thorax with large deep punctures; elytra yellow... .....**puncticollis**, Lec.
Thorax densely and confluently punctured; elytra nearly red..... .....**granicollis**, Hald.

The last two species have the outline of the mandible when viewed directly in front sinuous with the inner angle deflexed. The mentum of *consobrina* has the sides less rounded than in any other of our species and the anterior margin bisinuous, the middle being as prominent as the angles; the surface is nearly flat but with a ridge extending from the base of the palpi inward and backwards in an arcuate manner becoming gradually fainter behind.

OSMODERMA, Lepell.

O. socialis, n. sp.—Castaneous shining, head and thorax black, the latter reddish or greenish bronzed. Head black, densely and finely rugose, vertex slightly concave, frontal margin strongly reflexed, in front of eyes a broad triangular horn with the hinder edge sinuous. Thorax one-fifth broader than long, broadest at anterior third, sides strongly rounded in front to anterior third then gradually narrowed to base which is as broad as the thorax is long; hind angles obtusely rounded, base with broad lobe at middle; disc with median broad sulcus broader behind, limited on each side by obtuse ridges which gradually approximate in front, and end each in a rather sudden but small elevation; on each side an obtuse elevation between the termini of the ridges and the strongly rounded portion of the side; surface evenly and sparsely and not coarsely punctured. Scutellum with median impressed line, sparsely punctured between the elytra and densely under the thoracic lobe. Elytra but slightly longer than broad, finely wrinkled and coarsely punctured. Body beneath sparsely pubescent, black, terminal segments of abdomen picco-rufous.

Female.—Vertex flat, front with arcuate impression between the eyes, anterior margin not reflexed, surface coarsely scabro-punctate. Thorax similar in form to the male but less broad anteriorly, middle with broad, shallow impression;

surface more coarsely and densely punctured. Length 1.25—1.08 ♂ and 1.12 ♀ inch; 32—27 mm ♂ and 28 mm ♀.

This species in its elytral sculpture is exactly intermediate between our other two species *cremicola* and *scabra*. The surface of the thorax is sculptured after the style of the latter species but in a more exaggerated degree. The anterior margin of the front is more reflexed than either. It may distinguished at once from either species by having the prosternum in front of the coxæ less convex and *strongly, transversely wrinkled*, as well as broader. The color of the surface varies somewhat. There is at times only the ground color (castaneous) visible, while others have a distinct greenish lustre. Its form is broader and more robust than *cremicola*.

CREMASTOCHILUS, Knoch.

During an examination of my specimens of the above genus two were found that could not be referred to any described species and the present opportunity is made use of to present to students of our fauna the results of my own observations. As will be seen by the annexed table the species divide themselves very naturally into three groups according to the form of the mentum. The more nearly we approach the Pacific the more acute does the cupule of the mentum become at its hinder angle and as a general rule less deep in its concavity. On the eastern slope the mentum is broader, the cupule deeper and at the posterior portion notched to the bottom. Two California species have decidedly fossorial legs, the tibiæ being broader and shorter and the tarsi very short and compressed. These two (*Schaumii* and *angularis*) I found very frequently in ants' nests and in one instance apparently eating the pupæ. Several times I have seen large black ants dragging specimens of *Schaumii* along the surface of the ground toward their nests and on examination have frequently succeeded in obtaining from nests specimens that had previously been dragged there. Why these insects are found with ants is a question to which I am not prepared to give a definite answer, unless as I suspect the fossæ at the anterior angles and the finely punctured and apparently perforated patches under the hind angles are glandular and yield some secretion grateful to the ants.

The following table gives the result of a short study.

Mentum plate acutely angulate behind.
Anterior tarsi with last two joints rather suddenly thicker.
Teeth of anterior tibiæ distinct; hind angles of thorax moderately prominent.....**planatus**, Lec.

Teeth of anterior tibiæ obsolete; hind angles of thorax very feeble.....**depressus**, n. sp.

Anterior tarsi normal.

Legs moderate, ambulatorial, tarsi as long as tibiæ and only very feebly compressed.

Shining species; apical angle of anterior tibiæ prolonged.

Thoracic disc with deep groove on each side: hind angles spiniform.....**saucius**, Lec.

Thorax not grooved angles nodiform.....**nitens**, Lec.

Opaque species; apical angle not longer than upper tooth.

Head and thorax glabrous .....**Knochii**, Lec.

Head and thorax pilose.....**pilosicollis**, n. sp.

Legs short, compressed, decidedly fossorial, tarsi short, not as long as tibiæ, strongly compressed, claws small.

Hind angles limited within by an impressed line.....**angularis**, Lec.

Hind angles not limited within; legs hairy.....**Schaumii**, Lec.

Mentum plate subacute behind and with a slight notch.

Thorax suddenly constricted at base; hind angles nodiform.....**variolosus**, Kby.

Thorax not suddenly constricted at base; angles sub-acute and prominent.....**squammulosus**, Lec

Mentum plate transversely oval, deeply notched behind.

Surface opaque.

Anterior angles with a notch on anterior margin only..**canaliculatus**, Kby.

Anterior angles limited within and behind by an incisure, nodiform .....**castaneæ**, Knoch.

Surface shining.

Anterior angles nodiform, without lateral incisure.....**Harrisii**, Kby.

The first three species have a short frontal carina joining the reflexed edge in front, while the first two have the sides of the head also carinate and a transverse occipital groove and the pygidium elevated longitudinally. The two species just cited are very decidedly ambulatorial from the form of their legs which are relatively longer than any others of the genus. The anterior tibiæ are slender, slightly arcuate and the teeth of the outer edge small or obsolete. The tarsi are longer than the tibiæ and the anterior pair with the peculiar formation indicated in the table. The dorsum of the elytra is also perfectly flat and bounded laterally by a slightly elevated border.

C. depressus, n. sp.—Black feebly shining. Head sparsely punctured with short carina at middle of clypeus and a lateral carina extending from the occiput where it is higher, to the reflexed clypeal margin; occiput with transverse groove. Thorax one-fourth broader than long, broadest at anterior third, sides strongly rounded in front gradually narrowed to base; anterior angles moderately prominent, limited behind by a slight sulcus in the lateral margin; hind angles not prominent, limited within by a slight sulcus parallel with the margin; basal margin lobed at middle; disc coarsely punctured and with a shallow median sulcus deeper and broader behind. Elytra flat, disc limited by

slight elevation, sides slightly convergent behind, surface punctured with elongate shallow foveæ, at the sides rounder. Terminal spiracle feebly prominent. Pygidium sparsely foveate and subcarinate at middle. Body beneath more shining, sparsely foveato-punctate; sides of prothorax with distant strigæ Legs slender, anterior tibiæ slightly arcuate, teeth obtuse nearly obsolete. Length .66 inch; 17 mm,

Two specimens taken by Mr. Gabb, in California, probably in the southern end of Tulare Valley.

Closely allied to *planatus*, which has the hind angles of the thorax prominent and smooth, and the teeth of the tibiæ acute. The fourth anterior tarsal joint is suddenly broader than the preceding and equals twice its breadth. The anterior edge of the mentum plate is thicker and in the concavity more coarsely punctured.

C. pilosicollis, n. sp.—Black, opaque. Head convex, coarsely punctured and clothed with long black erect hairs. Thorax moderately convex, densely and coarsely punctured and clothed with long black erect hairs; anterior margin truncate at middle, rather suddenly sinuate within the anterior angles which are moderately prominent; sides rounded and slightly sinuate near the hind angles which are moderately prominent, acute and limited within by a faint groove. Elytra slightly convex, parallel, surface with coarse deeply impressed punctures, and sparsely pilose. Last spiracle moderately prominent. Pygidium convex with coarse foveæ and long hairs. Body beneath coarsely punctured and sparsely hairy. Mentum with an obtuse point behind. Length .44 inch; 11 mm.

This species greatly resembles *angularis*. but is more convex and clothed with much longer hairs. The main difference between the two species is in the form of the tarsi and tibiæ of which mention has already been made.

One specimen from northwestern California, collected by Mr. Gabb.

C. angularis, Lec.=*armatus*, Walker, Nat. in Vancouver II, 320,

I have specimens of the latter species taken in an adjacent region. It is greatly to be regretted that the above paper by Mr. Walker, was ever allowed to be placed in print, for besides the absolutely valueless descriptions, scarcely one species in ten (if as many) is really new, the large number being well known common species, some having been described by Eschscholtz and Mannerheim more than twenty-five years ago.

XYLOBIUS, Latr.

X. cylindriformis, n. sp.—Cylindrical, slightly narrowed posteriorly, shining. Head convex, coarsely punctured, black; clypeus and anterior margin of front rufous. Antennæ entirely rufous. Thorax slightly broader than long, somewhat narrower in front, very convex, coarsely punctured, at base a slight impression on each side of scutellum; color black, apex and base margined with rufous, also the sides but very narrowly; hind angles acute not divergent, em-

bracing the elytra at base and stronly carinate. Elytra cylindrical, feebly narrowed behind obtusely rounded at apex, surface with striæ of moderately coarse punctures, intervals with a single row of finer punctures; color piceous, entire limb, suture and scutellum rufous. Body beneath—thorax black entirely margined with rufous, pectus black, abdomen and legs rufous; surface coarsely punctured. Length .20 inch; 5 mm.

Resembles very closely the figure given by Duval of *X. alni*, of Europe, but differs in the sides of the thorax being gradually but feebly rounded from tip of angles to apex and not sinuate. Specimens of *X. alni*, are unknown to me and I am not able therefore to institute more careful comparison.

I have seen two specimens from California, one in my cabinet and another in that of Mr. Ulke.

CLERUS, Geoffr.

C. (Thanasimus) repandus, n. sp.—Head black, densely punctured and sparsely clothed with erect black hairs. Antennæ black. Thorax scarcely wider than the head, strongly constricted at base and with apical impression deep; surface coarsely punctured sparsely clothed with greyish recumbent and erect black hairs; color red or yellowish-red, margined at apex with black. Elytra parallel, twice as long as wide, at basal two-fifths coarsely and deeply punctured, apical three-fifths densely and finely punctured; color and vestiture—basal two-fifths red, similar in color to the thorax, sparsely clothed with erect black hairs; apical three-fifths black, clothed with short black recumbent hairs and crossed at one-fourth from the apex by a narrow pale band the anterior margin of which is simply arcuate, the posterior sinuate and densely clothed with recumbent whitish hairs. Body beneath red, legs black. Length .28—.36 inch; 7—9 mm.

Closely allied to *trifasciatus*, but differs in the black head and the narrower pale band near the apex of the elytra. The line of union of the red and black portions of the elytra, is trisinuous and with a narrow border of pale pubescence. The anterior margin of the hinder pale band is nearly a true arc and not sinuate, the hinder margin is nearly parallel with the anterior but extends also slightly along the suture. The sculpture and form resemble that of *trifasciatus*.

Occurs from northern California to Sonora.

HYDNOCERA, Newm.

H. albocincta, n. sp.—Pale brownish testaceous, subopaque, sparsely clothed with silvery white semi-erect hairs. Head sparsely punctured; antennæ testaceous. Thorax slightly longer than broad, truncate at apex and base, with transverse impressed line behind apex; sides strongly rounded in front, rather suddenly sinuate and narrowed to base. Elytra entirely covering the abdomen. very coarsely and densely perforato-punctate, with narrow transverse white band slightly behind the middle and a smaller spot near the suture intermediate between the median and a subhumeral band; color pale brownish testaceous, darker behind the median band. Body beneath similar in color to the upper surface, abdomen brown. Legs testaceous, tibiæ brownish. Length .12 inch; 3 mm.

A very slender species more elongate than *unifasciata*, which it otherwise resembles in form. Its elytra are more coarsely punctured than any species in our fauna, and may be readily known by the color and the white markings.

Specimens were collected by Mr. G. W. Belfrage, at Waco, Texas.

SCOTODES, Esch.

Within a few days I have received from Europe types of *S. annulatus*, Esch., and find on careful comparison that the genus established by me for our species, *Anelpistus*, must be suppressed. At the time (Trans. Ent. Soc. June, 1870, p. 88) I stated that *Scotodes*, was unknown to me in nature, and as but one species was known from Russia and the figure by Duval indicated an insect so different from our own, I felt justified in assigning provisional differences with the hope of having comparisons made and characters of more moment noted. Not only do the genera agree but the species also are very closely allied. As compared with *annulatus* our species has a broader thorax not sinuate on the sides and the hind angles consequently less distinct, the elytra are punctured at the apex and become gradually more scabrous toward the base. In both species the elytra are clothed with similar pubescence, arranged in our species in two tranverse bands (at middle and at apical three-fourths) and in *annulatus*, in three. The sculpture in the latter species is similar over the entire surface and is not coarsely scabrous. Hind tibiæ arcuate, *americanus* ♂; straight in *annulatus* ♂.

Scotodes americanus, Horn.

Anelpistus americanus, Horn, Trans. Ent. Soc. 1870, p. 88.

The type of *Scotodes annulatus*, Esch., was kindly presented by Mr. Alex. Fry, of England.

TRIPLAX, Payk.

T. (Tritoma) aulica, n. sp.—Ovate, shining; head and thorax above, and beneath, legs and humeral spot yellow; body beneath black, tips of abdomen yellowish. Head and thorax sparsely punctured. Antennæ yellow, club black third joint equal nearly to the three following. Elytra black, humeral spot yellow, surface with striæ of fine punctures, intervals finely punctulate. Body beneath sparsely punctulate. Tibiæ moderately dilated. Length .12—.18 inch; 3—4.5 mm.

The humeral spot is moderate in size and similar to that of *humeralis*, involving the epipleuræ and extending inwards slightly within the third stria and somewhat pointed behind. It is the only species in our fauna with yellow thorax and humeral spot together.

Specimens in my cabinet were collected and kindly presented by Dr. S. V. Summers, of St. Louis, Missouri.

PLATE IV.

FIGURE 1. **Meristhus texanus**, Horn.
" 2. **Meristhus cristatus**, Horn.
" 3. **Coptostethus americanus**, Horn.
" 4. **Cryptohyphus perplexus**, Horn. Humeral spot reddish.
" 5. **Elater Behrensi**, Horn. Elytra reddish-yellow, apex black.
" 6. " **cordifer**, Lec. Elytra reddish-yellow; cordiform spot black.
" 7. " **cordatus**, Horn. Elytra reddish-yellow, cordiform spot black.
" 8. **Drasterius grandicollis**, Horn. Color ochraceous.
" 9. **Megapenthes Rogersi**, Horn. Thorax black, elytra reddish, dotted spaces black.
" 10. " **stigmosus**, Lec. Thorax black, elytra black, spots yellow.
" 11. " var. **caprella**, Lec. Thorax black, elytra black, spaces yellow.
" 12. " **elegans**, Horn. Thorax black, post. angle yellow; elytra black, spaces reddish.
" 13. **Ludius Lecontei**, Horn. Entirely black.
" 14. **Limonius Ulkei**, Horn. Thorax black; elytra red, suture near apex blackish.
" 15. " **mirus**, Lec. Thorax black; elytra red, apex black.
" 16. " **quadrimaculatus**, Horn. Thorax black; elytra black, spots red.
" 17. " **maculicollis**, Motsch. Entirely black; margin of thorax testaceous.
" 18. **Corymbites trapezium**, Lec. Entirely blacck.
" 19. " **umbripennis**, Lec. Thorax black; elytra yellowish black markings.
" 20. " **triundulatus**, Rand. Thorax black; elytra yellowish, bands black.
" 21. " **longicornis**, Horn. Thorax black; hind angles yellow; elytra yellowish, stripes black.
" 22. " **hamatus**, Say. Yellowish, apical dotted portion blackish.
" 23. " **appressus**, Rand. Thorax red, disc black; elytra yellow, markings blackish.
" 24. **Oxygonus obesus**, Say. Thorax black; elytra reddish. Tarsal claw seen beneath.

BIOLOGICAL NOTES ON DIPTERA, (Article 3d.)

BY R. OSTEN SACKEN.

1. A *Cecidomyia*, living in pine-resin (*Diplosis resinicola*, n. sp.)

On the 28th of May, 1871, being in Tarrytown, N. Y., I noticed some lumps of semi-liquid resin on the smaller limbs of young scrub pines (*Pinus inops*) growing in a garden on the banks of the Hudson River. These lumps where whitish, about half an inch long, or smaller. On trying to remove the resin, I noticed that it harbored a number of reddish maggots; some specimens containing two or three only, others as many as twenty. The maggots had the color of the larvæ of *Cecidomyia*, but, in some other respects they were different. No lateral spiracles were apparent, but, in their stead, a pair, of horny, approximate dentate tubes at the anal end of the body, not unlike the respiratory tubes of the larvæ of *Syrphus*. The breastbone, usually distinctive of the larvæ of *Cecidomyia*, was not apparent. The manner of extending and contracting the body, especially the front part, also reminded one of *Syrphus*. When, after having been disturbed by me, they were left alone for some time, they again buried themselves in the resin, their respiratory tubes alone appearing on the surface of the lump. By counting these, under a magnifying glass, one could easily ascertain the number of the hidden larvæ. After having brought them home, I noticed after a few days that the larvæ had gradually contracted towards the inside of the lump, each however remaining connected with the open air by a tubular passage of apparently hardened resin. Both these tubes and the reddish larvæ at their inner end were visible through the semi-transparent resin.

It was evident that the larvæ were undergoing transformation. A few days more, and the reddish color of the pupæ became blackened, and on the 11th of June the flies escaped. The process was as follows: the pupa, by gentle contractions and expansions of the abdominal segments gradually pushed itself along its tube towards the surface of the lump, until its thorax projected out of the resin; then the thorax split open and the fly emerged in the usual manner; the pupa-case remained behind, sticking out of the resin. The pupa is quite smooth without any horny projections on its front part. I obtained about twenty flies from a single lump, which, after their escape, looked quite honeycombed by the now empty, vermicular tubes.

Diplosis resinicola, n. sp.—Length 0.12—0.14 of an inch. *Male* antennæ not much shorter than the body, of dark color, except the scapus, which is reddish; 2x24 jointed, flagellum with small, subglobular joints alternating with double, subcylindrical ones; pedicels between the joints about equal to the diameter of the shorter joints, somewhat longer towards the end of the antennæ. joints verticillate, the length of the hairs of the verticils not exceeding the length of joints. *Female* antennæ less than half as long as the body, 2x12 jointed; joints of flagellum subcylindrical, more than twice longer than they are broad, the basal ones being the longest; pedicels short: the hairs, clothing the antennæ, are shorter than each single joint. Head strongly gibbous above, which gibbosity is very striking, when viewed in front or from the side; the black eyes being absolutely confluent, and covering the whole gibbosity, occupy nearly the whole surface of the head, except a small space round and below the antennæ and a portion of the occiput, which are brownish red (the brown predominating in several specimens). The ground color of thorax is reddish; the dorsal portion however, including the scutellum, are grayish brown; rows of yellowish hairs indicate the direction of the ordinary stripes (when rubbed off these hairs show gray stripes under them); the middle stripe is divided in two by a grayish longitudinal line; pleuræ and sternum reddish, mixed with brownish gray; abdomen reddish, with grayish-yellow hairs, long and erect along the sides, short and appressed on the back; genitals pale. Feet brownish, with a yellowish-gray, appressed pubescence; some longer hairs on the underside of the femora halteres; with dark knobs. Wings gray, second longitudinal vein arcuated in its latter portion, ending immediately beyond the apex of the wing.

Described from 4 ♂, and 7 ♀, specimens, before they were dry.

The extraordinary shape of the head will render the recognition of this species easy.

Observation.—The antennæ of this species, in both sexes, are exactly similar to the pair of antennæ figured by Winnertz in *Linn. Entom. VIII*, tab. *III*, fig. 7, a. b. Now these figures represent the antennæ of *Diplosis pini*, Degeer, a species which forms a cocoon of resin on pine leaves, (An American species, called by me *Cec. pini inopis*, has exactly the same habit; compare monographs of N. A. Diptera, Vol. I, p. 196). But, beyond this resemblance of the antennæ, the perfect insects in both species are very distinct, as well as the larvæ and the pupæ. (The larvæ of *D. pini*, it may be remembered, has two rows of peculiar fleshy tubercles along the back.)

2. A gall of *Cecidomyia*, on the wild cherry, (*Cecidomyia cerasi serotinæ*, n. sp.

The terminal buds of young shoots of the wild cherry (*Cerasus serotina*), are enlarged, sometimes to the size of a cherry; the gall is red, more or less rounded; one or two leaves issue from its sides; surface more or less even, except the apex, which is irregular, showing the

tips of deformed leaves. The whole appearance of the gall is not unlike that of a ripe rose-apple (seed of a rose). The consistency of the gall, when young, is fleshy; the cavity on the inside occupies about one half of the diameter of the gall; it is filled with bright-yellow larvæ, which have the power of leaping by the contraction of their bodies. Found in Tarrytown, May 28 1871.

3. *Additions and Corrections.*

As related by me in the *Trans. Am. Ent. Soc.* 1869, p. 299. I bred *Asphondylia monacha*, O.S. from *Solidago-galls* in September and October. Since then, I caught a *male* specimen of this insect on the 17th of June 1871, near Tarrytown, N. Y., on what was apparently a young shoot of *Solidago*. That the insect should reappear in the early summer in order to lay its eggs on that plant, thus giving rise to the growth of the future gall, is very natural. But the question remains to be solved, what becomes of it between September and June? The specimen caught by me was perfectly fresh and did not look rubbed and battered, as insects which are covered with scales and delicate deciduous hairs usually do after hybernating. Did it belong to a second brood? And if it did, where does this brood develop? Almost every gall suggests similar questions as to the mode of existence of the gall-producing insect during the greater part of the year; but in most cases, *Cecidomyiæ*, on account of the uniformity of their coloring, hardly attract any notice, except in connection with galls. The coloring of *A. monacha* however is so striking, that it affords a very good oportunity for observations of this kind.

This summer (June, 1871) at Tarrytown, N. Y., I have again observed the enlarged buds of *Sambucus racemosa*, containing larvæ of *Cecidomyia sambuci umbellicola* (compare these Transactions, Vol. III, p. 52.) The buds fall to the ground very easily, where, I suppose, the transformation of the fly takes place.

In the same paper (Trans. Am. Ent. Soc. Vol. III, p. 53), *Cecid-quercus majulis*, should read *C. q. majalis.*

Descriptions of two new species of MASARIS.

BY E. T. CRESSON.

Masaris occidentalis, n. sp.—♀.—Fulvo-ferruginous; face with rather dense yellowish pubescence; head above clypeus black, the orbits, a semi-circular spot between antennæ and a dot above it, fulvo-ferruginous; club of antennæ blackish above; mesothorax black, with a fulvo-ferruginous stripe over tegulæ; base of scutellum and pleura black, the latter with a large ferruginous spot beneath wings; metathorax with a short robust spine on each lateral angle; wings fuliginous, costa yellowish; legs honey-yellow, posterior tibiæ and tarsi paler; first and second abdominal segments fulvo-ferruginous, the third, fourth and fifth bright yellow, base of first with a large quadrate black spot, second, third and fourth black at base, broadly dilated towards the middle, apical segment honey-yellow; on each side of the segments near apical margin a short, narrow, longitudinal, ferruginous stripe; venter yellow, honey-yellow at apex, apical segment narrowly black at base. Length 8 lines.

Hab.—Texas. (Belfrage.) One specimen.

Masaris texanus, n. sp.—♂.—Black, shining; a triangular honey-yellow mark above antennæ, enclosing ocelli, the anterior margin of which is sinuate, sometimes this mark is purplish-ferruginous, margined with pale yellow; clypeus with a median quadrate spot at base, sometimes yellowish, with roseate disk; mandibles and palpi more or less pale; antennæ black, the fifth to seventh joints and basal half of club, beneath, pale yellow, their apex ringed with black, club ferruginous laterally at tip; collar with a yellow spot on each side; prothorax with a broad lemon-yellow band not reaching tegulæ, each extremity of the band deeply emarginate and sometimes stained with roseate; mesothorax with two more or less distinct dots in front and a central spot, fulvous; scutellum with a sublunate fulvous spot near apex; tegulæ lemon-yellow, sometimes stained with roseate; lateral spines of metathorax yellowish; pleura with a yellow spot beneath wings; wings subhyaline, costa from stigma to tip of marginal cell, fuscous; legs fulvous; abdomen black, polished, apical margin of each segment more or less broadly yellow, indented on each side anteriorly, except on first segment where the band is broadest, those on second and third segments interrupted by a large purplish-ferruginous stain, which divides the band into three spots, the three following segments have each a continuous, sinuous yellowish apical fascia; apical segment deeply bifid at tip; second and third ventral segments ferruginous, the fourth and fifth with a yellowish band; third ventral segment with a large, prominent, ferruginous projection, submarginate and obtuse at apex. Length 6 lines.

♀.—Besides the sexual characters the ♀ differs from the ♂ as follows:—The colors more obscure; a median spot on the face and the emargination of eyes yellowish; spot on clypeus larger; antennæ ferruginous, second joint black, club dusky above; prothorax dull purplish-ferruginous, a yellow linear spot on each side anteriorly; scutellar spot ferruginous; abdomen dull, yellowish bands narrower, the first three obtusely indented on each side anteriorly with dull ferruginous; apical segment with a lateral yellow spot. Length 6 lines.

Hab.—Texas. (Belfrage.) Two ♂, two ♀ specimens.

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ERRATA.

PAGE. 223. Before species 21, insert *Subdivision II.*
" 248. Before species 77, insert *DIVISION II.*
(For additional Errata, see pages 265 and 296.)

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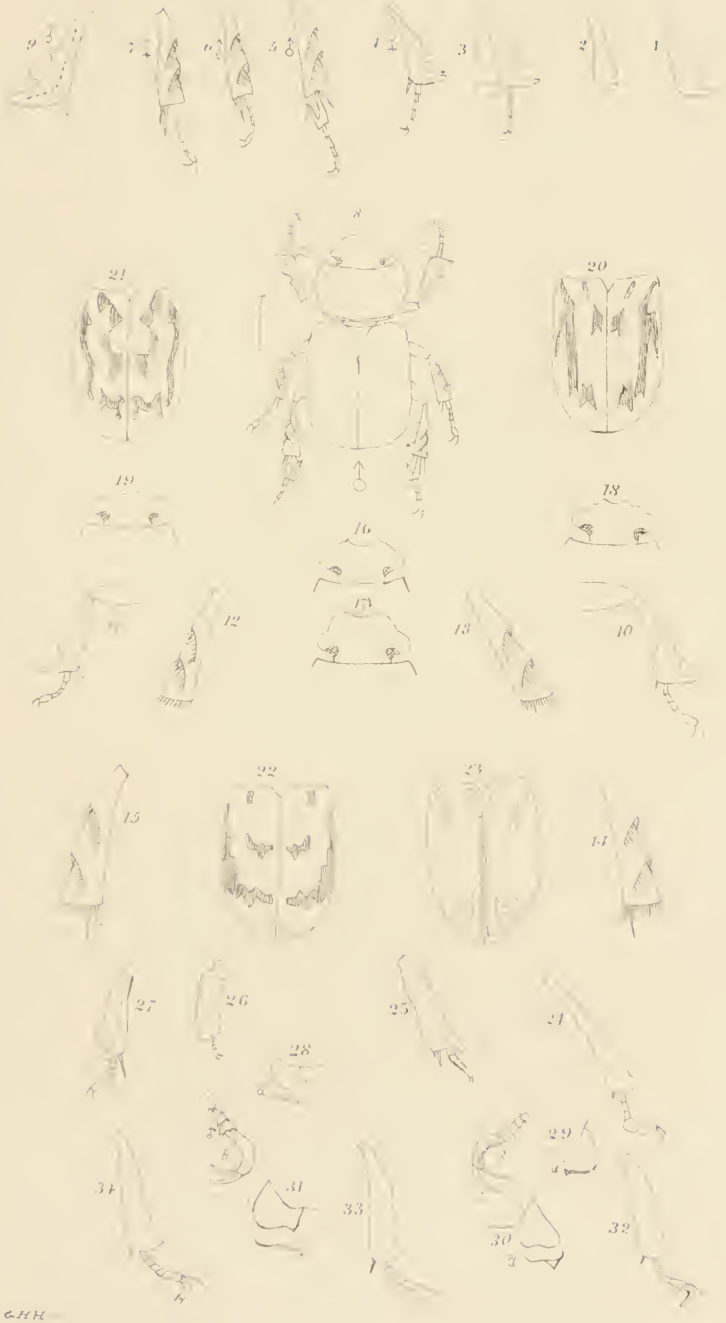
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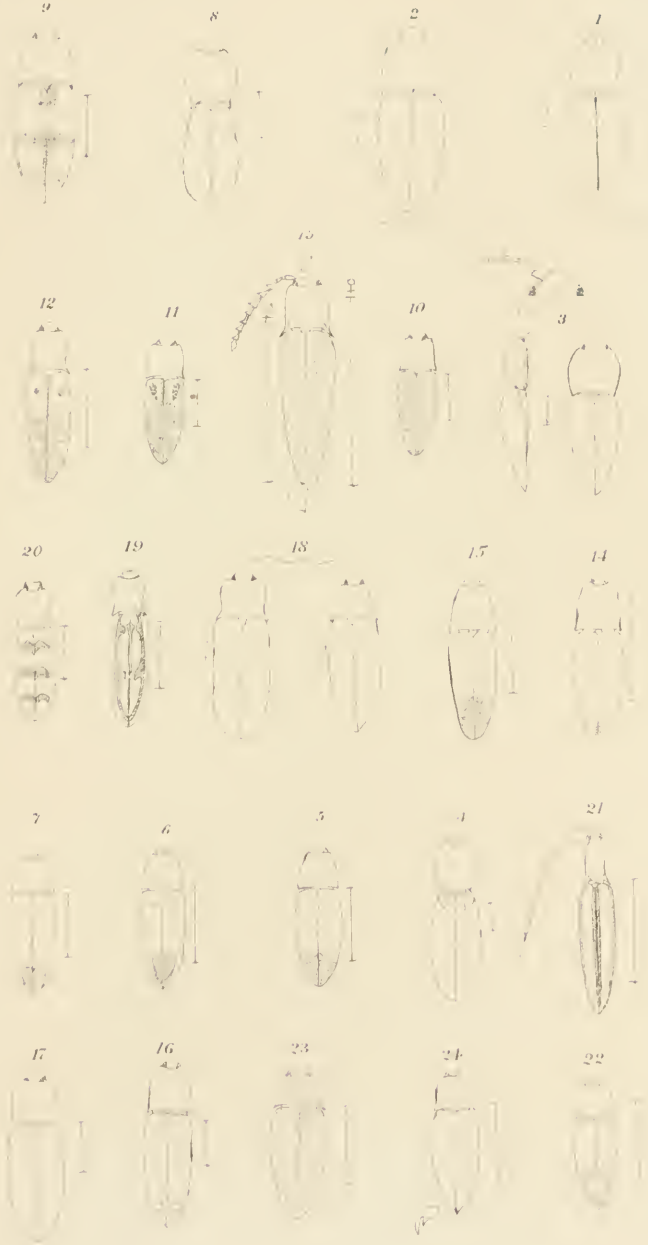
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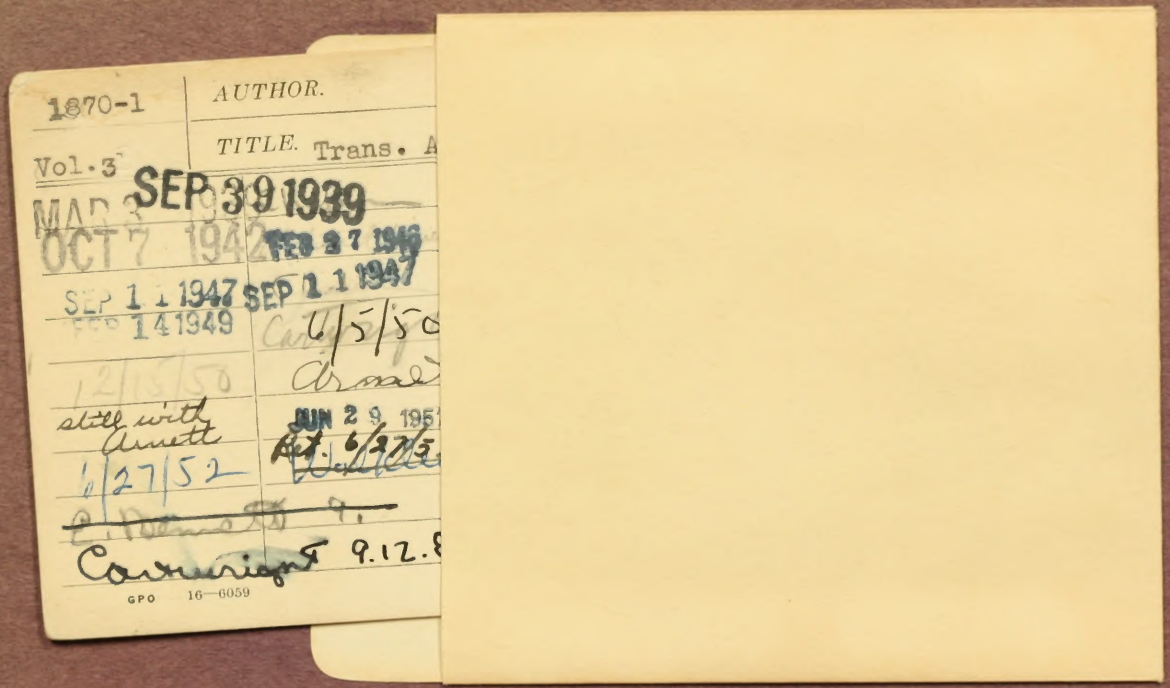

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